BEFORE THE NEW MEXICO OIL CONSERVATION DIVISION

APPLICATION OF BEACH EXPLORATION, INC. FOR APPROVAL OF A WATERFLOOD PROJECT AND TO QUALIFY THE PROJECT FOR THE RECOVERED OIL TAX RATE, EDDY COUNTY, NEW MEXICO. **No. _____**

APPLICATION

Beach Exploration, Inc. applies for an order approving a waterflood project for the proposed West High Lonesome Unit Area, and qualifying the project for the recovered oil tax rate. In support thereof, applicant states:

1. Applicant is the operator of the proposed West High Lonesome Unit Area (the "Unit Area"), which covers the following state and federal lands located in Eddy County, New Mexico:

TOWNSHIP 16 SOUTH, RANGE 29 EAST, N.M.P.M.

Section 17:	S½NW¼, SW¼, and W½SE¼
Section 18:	Lots 2, 3, 4, S½NE¼, SE¼NW¼, E½SW¼, and SE¼
Section 19:	NE¼ and E½NW¼
Section 20:	NW¼NE¼, N½NW¼, and SW¼NW¼

Containing 1156.60 acres, more or less.

The unitized interval is the Penrose Sand member of the Queen formation, as further described in the unitization application filed concurrently herewith.

2. Applicant proposes to institute a waterflood project on the Unit Area. Applicant's address is Suite 200, 800 North Marienfeld, Midland, Texas 79701 (Attention: Robert N. Hinson).

3. Applicant proposes to inject water into the Penrose Sand member of the Queen formation through eighteen existing and planned injection wells. A plat outlining the Unit Area, and marking the locations of the initial and proposed injection and producing

wells, is attached hereto as Exhibit A.

4. Applicant requests that the waterflood project for the Unit Area be qualified for the recovered oil tax rate, pursuant to the Enhanced Oil Recovery Act (L. 1992, Ch. 38) and Division Rule 30. Project data includes:

(a) Number of initial producing wells:

Phase I: 14.

Phase II: 9

(b) Number of initial injection wells:

Phase I: 13.

Phase II: 18

(c) Capital cost of additional facilities: $929,000.00.

(d) Estimated total project cost: $6,400,000.00.

(e) Estimated total value of incremental production recovered from the project: $9,910,000.00.

(f) Anticipated injection commencement date: September 1, 2001.

(g) Type of fluid injected: Produced and fresh water.

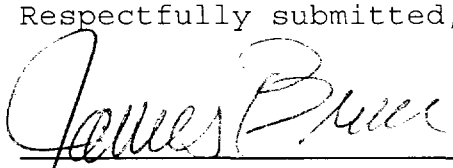
(h) Anticipated injection volumes: 3600 BWPD maximum.

5. A Form C-108 for the injection wells and project is attached hereto as Exhibit B.

WHEREFORE, applicant requests that the Division (a) approve the injection application and waterflood project for the Unit Area, including a provision allowing administrative approval for expansion of the project area, (b) qualify the project as an enhanced oil recovery project, and (c) certify the project for the

recovered oil tax rate.

Respectfully submitted,



James Bruce
Post Office Box 1056
Santa Fe, New Mexico 87504
(505) 982-2043

Attorney for Beach Exploration, Inc.

VERIFICATION

STATE OF TEXAS)
)
COUNTY OF MIDLAND)

Jack M. Rose, being duly sworn upon his oath, deposes and states: He is a petroleum engineer employed by Beach Exploration, Inc., he is familiar with the matters set forth in the foregoing Application, and the statements therein are true and correct to the best of his knowledge.

Jack M. Rose

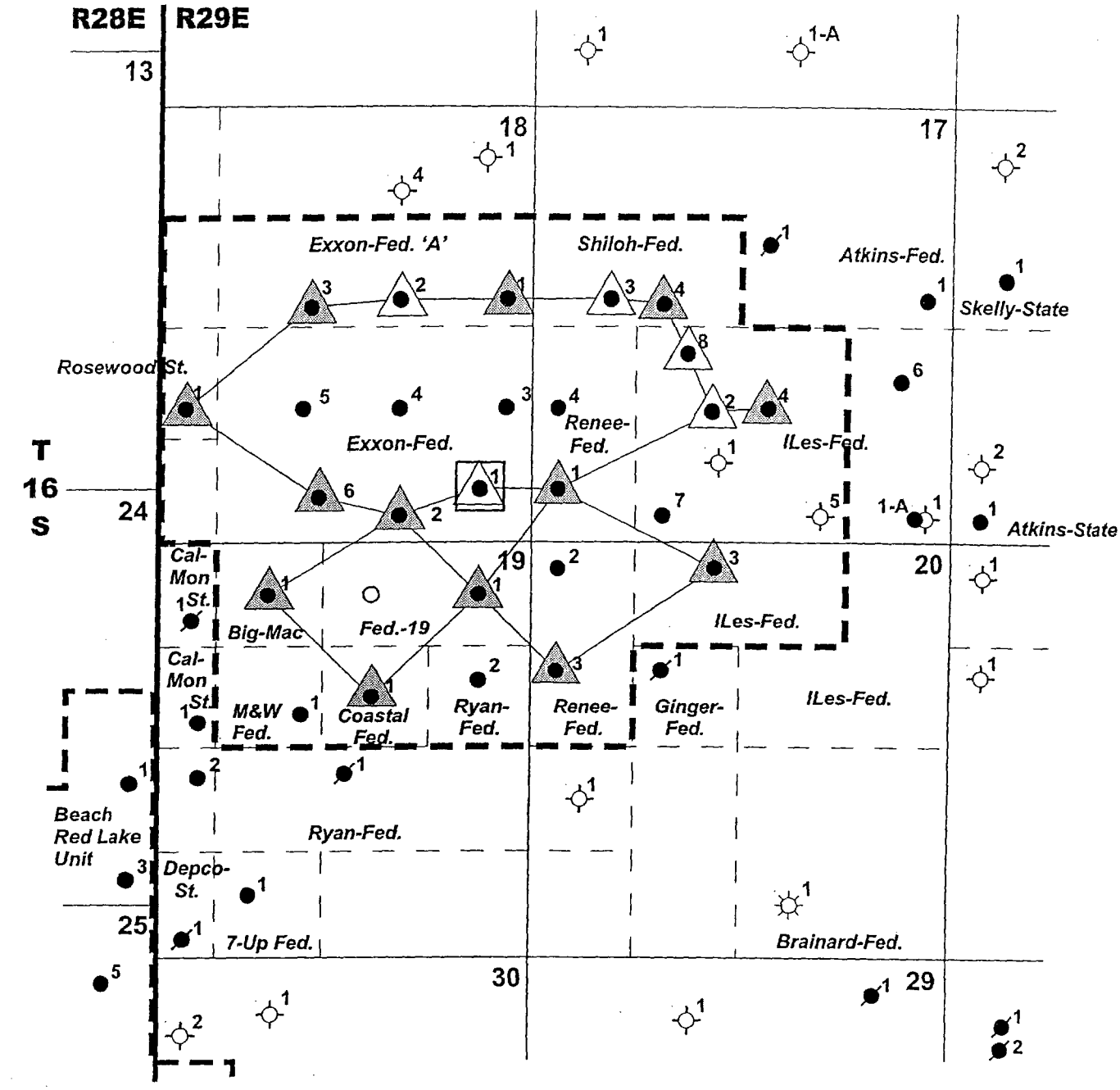
SUBSCRIBED AND SWORN TO before me this 19th day of June, 2001 by Jack M. Rose.

BARBARA J. WATSON
Notary Public, State of Texas
My Commission Expires
February 16, 2004

Notary Public

My Commission Expires:

2-16-2004



N

Injector Phase I

Injector Phase II

Drill Producer

Central Battery

Beach Exploration, Inc.

WEST HIGH LONESOME
PENROSE SAND UNIT

Proposed Unit Boundary
& Injection Pattern

0 1000 2000

Eddy County, New Mexico Scale : 1"=2000'

JMR October 2000

EXHIBIT
A

Blumberg No. 5208

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

FORM C-108
Revised 4-1-98

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: X Secondary Recovery _____ Pressure Maintenance _____ Disposal _____ Storage
Application qualifies for administrative approval? _____ Yes X No

II. OPERATOR: Beach Exploration, Inc.

ADDRESS: 800 N. Marienfeld Ste. 200 Midland, Texas 79701

CONTACT PARTY: Jack Rose PHONE: 915/683-6226

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____ Yes X No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Jack M. Rose TITLE: Engineer

SIGNATURE: Jack M. Rose DATE: June 18, 2001

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

Beach Exploration, Inc.

C-108 Application

Proposed West High Lonesome Penrose Sand Unit

Eddy County, New Mexico

Form C108 – Item I. Purpose - Secondary Recovery

Form C108 – Item II. Operator - Beach Exploration, Inc.
Address - 800 N. Marienfeld, Suite 200
Midland, Texas 79701-3382
Contact - Jack M. Rose (915) 683-6226

Form C108 – Item III. Injection Well Data Sheets (attached 3 legal sheets)

Form C108 – Item IV. Expansion of existing project? **NO**

Form C108 – Item V. Large area map and Area of Review Detail map (attached)

Form C108 – Item VI. Area of Review – Well data tabulation & schematics
Unit Producing Wells – (attached 2 legal sheets)
Offset Well – (attached 1 legal sheet)
Plugged Wells – (attached 1 list, 11 schematics)

Form C108 – Item VII. Feasibility Study – (attached 25 pages)
Development Plat – (attached map)
Water Analyses – (attached 10 pages)

A feasibility study of the proposed unit was prepared by T. Scott Hickman & Associates in 1993. This study is the basis for our proposed operation and it indicates that additional reserves of 538,000 barrels can reasonably be expected to be recovered as a result of waterflooding. The engineering study with its related geological information is included for your review.

The proposed development of the waterflood is as shown on the attached plat. It consists of conversion of thirteen existing wells to Phase I water injectors, drilling one additional producer, installation of a (closed system) waterflood plant and distribution system, consolidation of twelve tank batteries to a central battery, and installation of a supply water pipeline. A subsequent conversion of five existing unit producing wells to Phase II water injectors is planned when water breakthrough occurs in these wells.

Make-up water volume requirements have been recalculated based on current cumulative production and is estimated to be 1.6 million barrels. Total make-up water requirements will be at least 1.6 million barrels and could range up to 2.4 million barrels depending on injection efficiency (67% estimated previously). The maximum monthly requirement would be 110,000 barrels initially and should decrease uniformly to little or no usage in a 3.5 to 4 year period with re-injection of produced water. On a daily basis, the targeted injection rate will be 200 BWPD for each well. Initially with thirteen injectors this would

be 2,600 BWPD and after Phase II water injectors have been converted (5 additional) the daily requirement would be 3,600 BWPD.

The maximum injection pressure is anticipated to be 1100 psi. Experience in four other Penrose floods in this area show that injection pressures can vary from a low of 280 BWPD at 700 psi to 150 BWPD at 1100 psi. The pay quality in the area of the proposed flood is expected to be on the tighter side and higher injection pressures are anticipated.

A four-township area surrounding the proposed flood was investigated for potential sources of makeup water. There are a few water wells in the area. One is indicated to be a saltwater well and the rest are fresh. The State Engineer's office has indicated that these wells are shallow, discontinuous water sources of very limited capacity and unsuitable for our purposes.

The City of Carlsbad Water Supply System has several fresh water pipelines in the area that have serviced waterflood operations. The closest is 3.24 miles to the east. This source is capable of delivering more than twice our maximum required daily makeup volume. The delivery point is uphill from our proposed flood and strong enough to flow by gravity to our proposed flood site.

Produced water is scarce in the area of the proposed flood but abundant to the south. The proposed flood is central to two townships. No saltwater disposal wells exist in these two townships and total water production is 175 barrels of water per day. Nine disposal wells exist in the north half of the two townships to the south of the proposed flood. Three of the nine wells are handling sufficient volumes of water to be considered as possible sources for makeup water. Two of these three are considered to be cost prohibitive, requiring seven plus miles of large diameter pipeline to be installed. The remaining disposal well, Mack Energy's Big George State #3, handles 6,500 barrels of water per day from Mack operated wells in the Paddock and Yeso. This well is 5.1 miles to the south and would require pumping by mechanical means to reach the proposed flood site.

Beach Exploration is requesting the use of Carlsbad Double Eagle fresh water as make-up water for the West High Lonesome Penrose Sand Unit. The Big George State #3 disposal water is extremely poor quality. This water has severe problems with suspended solids, oil carryover, scaling tendencies and bacteria. The water borders on being cost prohibitive from a chemical treating and facilities requirement standpoint but most significantly it is Beach's opinion that it would pose a significant long-term risk to the success of the flood.

City of Carlsbad fresh water has been successfully used in Penrose floods in the immediate vicinity of our proposed flood and should not create a problem with soluble salts or swelling clays.

Enclosed are individual analyses for the two potential make-up water sources: City of Carlsbad Double Eagle Fresh Water and Mack Energy's Big George State #3 disposal well. Also enclosed are water compatibility reports for the combination of these two waters with produced water from the proposed flood interval (source: Beach, Exxon Federal lease).

Form C108 – Item VIII.
The injection zone in the proposed unit is locally called the Penrose sand, a lower member of the Queen formation. The sand is generally a gray, fine grained, well sorted, and rounded to sub-rounded quartz sandstone. The sand ranges from 26 to 32 feet in thickness in the proposed unit area, and ranges in depth from 1,650 feet to 1,800 feet depending upon regional dip and surface elevation.

The office of the State Engineer has said that no fresh aquifers exist above or below the proposed injection zone. There are scattered but very limited shallow fresh water Triassic sands in the area down to approximately 100 feet. These are produced from occasional windmills. Only one such windmill exists within one mile of any of the proposed injection wells.

Form C108 – Item IX.
There is no stimulation program planned for this unit initially other than routine acid treatments for potential calcium carbonate scaling.

Form C108 – Item X.
All wells in the proposed flood are of public record and logs have been filed with the OCD.

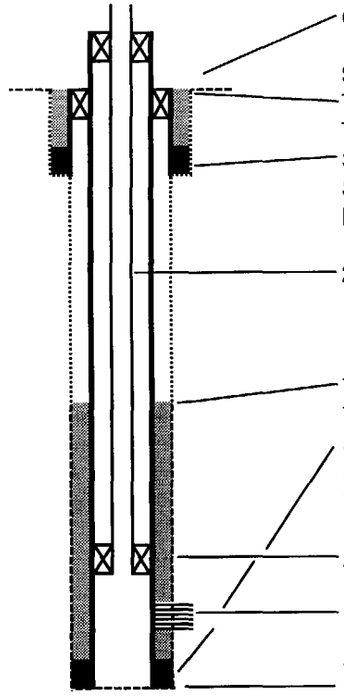
Form C108 – Item XI. Fresh water well water analysis – only one within one mile
Windmill located 900' FNL 400' FEL, Section 24, T16S, R28E, Eddy County, New Mexico
Location Plat (attached)
Chemical analysis (attached – Water Well #2)

Form C108 – Item XII. Not applicable

Form C108 – Item XIII. "Proof of Notice" to be supplied later

Beach Exploration, Inc.
Proposed West High Lonesome Penrose Sand Unit
Injection Well Data Sheet
Form C-108, Item III

TYPICAL SCHEMATIC

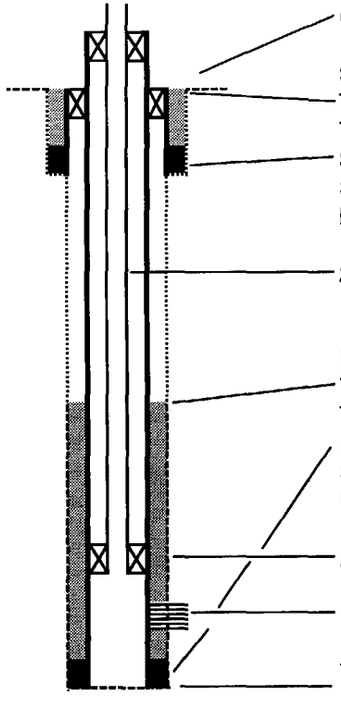


Operator	Beach Expl	Beach Expl	Beach Expl	Beach Expl	Beach Expl	Beach Expl
Lease & Well #	Exxon Federal "A" #1	Exxon Federal "A" #2	Exxon Federal "A" #3	Exxon Federal #1	Exxon Federal #2	Exxon Federal #6
Location	2310' FNL 330' FEL	2310' FNL 1650' FEL	2410' FNL 1932' FWL	660' FSL 660' FEL	330' FSL 1650' FEL	560' FSL 2035' FWL
Sec.-Unit, Twp., Rge.	18-H, 16S, 29E	18-G, 16S, 29E	18-F, 16S, 29E	18-P, 16S, 29E	18-O, 16S, 29E	18-N, 16S, 29E
G.L. Elev	3641'	3654'	3621'	3650'	3650'	3656'
SURFACE CASING:						
Top of Cement	Surface	Surface	Surface	Surface	Surface	Surface
TOC Determined by	Circulated	Circulated	Circulated	Circulated	Circulated	Circulated
Size & Depth of Csg	8 5/8" @ 307'	8 5/8" @ 295'	8 5/8" @ 330'	8 5/8" @ 302'	8 5/8" @ 343'	8 5/8" @ 307'
Sacks of Cement	250	250	250	225	475	250
Hole Size	12 1/4"	12 1/4"	12 1/4"	11"	12 1/4"	12 1/4"
2 3/8" Tubing (plastic coated)						
PRODUCTION CASING:						
Top of Cement	Surface	Surface	Surface	Surface	Surface	Surface
TOC Determined by	Circulated	Circulated	Circulated	Circulated	Circulated	Circulated
Size & Depth of Csg	4 1/2" @ 1800'	4 1/2" @ 1770'	4 1/2" @ 1705'	4 1/2" @ 1840'	4 1/2" @ 1814'	4 1/2" @ 1772'
Sacks of Cement	450	550	550	375	400	500
Hole Size	7 7/8"	7 7/8"	7 7/8"	7 7/8"	7 7/8"	7 7/8"
Approx. Pkr Depth	1664'	1652'	1595'	1672'	1663'	1658'
Perforations	1714' - 1728'	1702' - 1722'	1645' - 1655'	1722' - 1756'	1713' - 1750'	1708' - 1727'
Total Depth	1800'	1770'	1705'	1840'	1820'	1780'
Plug Back Depth	1784'	1768'	1692'	1828'	1800'	1772'

ALL WELLS:
2 3/8" Tubing internally plastic coated.
Model AD-1 Tension Packer set within 100' of top perf.
Injection formation: Penrose Sand member of Queen formation
Field: High Lonesome (Queen)
All wells were originally producers and will be converted to injection
There are no known overlying or underlying oil or gas zones.

Beach Exploration, Inc.
Proposed West High Lonesome Penrose Sand Unit
Injection Well Data Sheet
Form C-108, Item III

TYPICAL SCHEMATIC

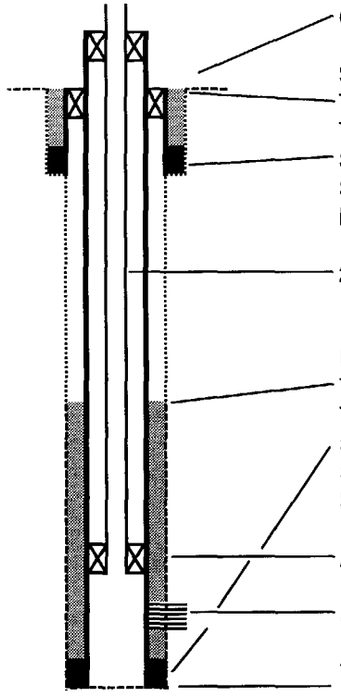


Operator	Beach Expl	Beach Expl	Beach Expl	Beach Expl	Beach Expl	Beach Expl
Lease & Well #	Rosewood St. "18" #1	Shiloh Federal #3	Shiloh Federal #4	Iles Federal #2	Iles Federal #3	Iles Federal #4
Location	1650' FSL 330' FWL	2310' FNL 988' FWL	2210' FNL 1650' FWL	1650' FSL 2310' FWL	330' FNL 2310' FWL	1650' FSL 2310' FWL
Sec.-Unit, Twp., Rge.	18-L, 16S, 29E	17-E, 16S, 29E	17-F, 16S, 29E	17-K, 16S, 29E	20-C, 16S, 29E	17-J, 16S, 29E
G.L. Elev	3578'	3640'	3649'	3643'	3649'	3643'
SURFACE CASING:						
Top of Cement	Surface	Surface	Surface	Surface	141'	190'
TOC Determined by	Circulated	Calculated	Calculated	Calculated	Calculated	Calculated
Size & Depth of Csg	8 5/8" @ 443'	8 5/8" @ 311'	8 5/8" @ 309'	8 1/4" @ 40	8" @ 328'	8 5/8" @ 298'
Sacks of Cement	270	250	250	20	50	50
Hole Size	12 1/4"	12 1/4" assumed	12 1/4" assumed	12 1/4" assumed	11" assumed	12 1/4" assumed
2 3/8" Tubing (plastic coated)						
PRODUCTION CASING:						
Top of Cement	Surface	Surface	Surface	1204' & Surf	358'	1105'
TOC Determined by	Circulated	Calculated	Calculated	Calc@shoe & perf@250'	Calculated	Calculated
Size & Depth of Csg	5 1/2" @ 1733'	4 1/2" @ 1850'	4 1/2" @ 1850'	5 1/2" @ 1700'	7" @ 1590'	7" @ 1740'
Sacks of Cement	375	500	650	100@1700' & 229@250'	100	50 thru perf @1725'
Hole Size	7 7/8"	7 7/8" assumed	7 7/8" assumed	7 7/8" assumed	7 7/8" assumed	7 7/8" assumed
Approx. Pkr Depth	1526'	1680'	1702'	1650'	1580'	1717'
Perforations	1576' - 1596'	1730' - 1758'	1752' - 1764'	1700' - 1812'(open hole) 1760' - 1812' pay interval	1590' - 1820'(open hole) 1776' - 1800' pay interval	1740' - 1800' (open ho 1767' - 1790' pay inter
Total Depth	1750'	1850'	1850'	1812'	1820'	1800'
Plug Back Depth	1681'	1844'	1840'	1812'	1820'	1800'

ALL WELLS:
2 3/8" Tubing internally plastic coated.
Model AD-1 Tension Packer set within 100' of top perf.
Injection formation: Penrose Sand member of Queen formation
Field: High Lonesome (Queen)
All wells were originally producers and will be converted to injection
There are no known overlying or underlying oil or gas zones.

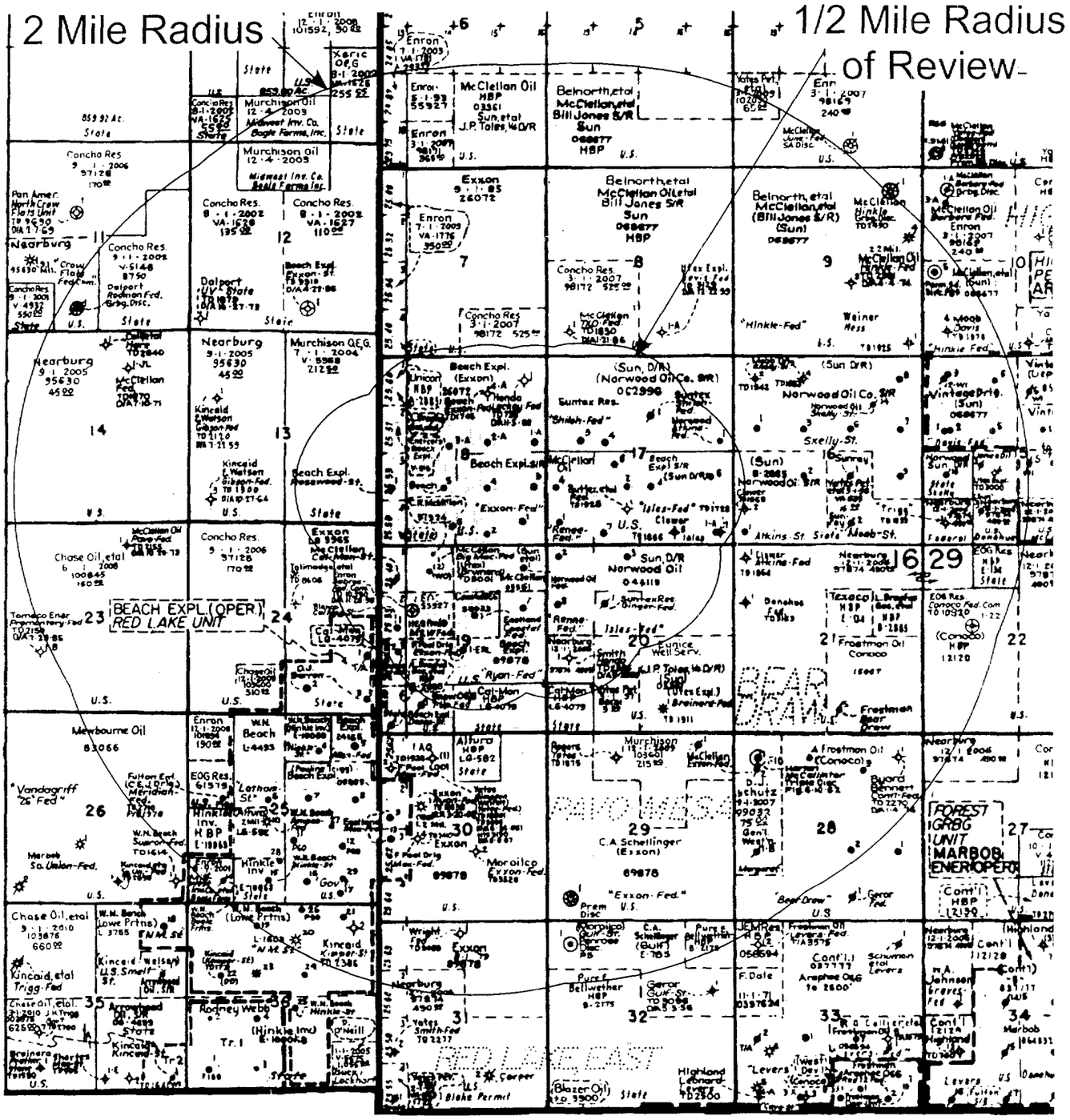
Beach Exploration, Inc.
Proposed West High Lonesome Penrose Sand Unit
Injection Well Data Sheet
Form C-108, Item III

TYPICAL SCHEMATIC



	Operator	Beach Expl	Beach Expl	Beach Expl	Beach Expl	Beach Expl	Beach Expl
	Lease & Well #	Iles Federal #8	Renee Federal #1	Renee Federal #3	Federal "19" #1	Big-Mac Federal #1	Coastal Federal #1
	Location	2310' FSL 1950' FWL	660' FSL 330' FWL	1650' FNL 330' FWL	660' FNL 660' FEL	660' FNL 3300' FWL	1980' FNL 1980' FEL
	Sec.-Unit, Twp., Rge.	17-K, 16S, 29E	17-M, 16S, 29E	20-E, 16S, 29E	19-A, 16S, 29E	19-C, 16S, 29E	19-G, 16S, 29E
	G.L. Elev	3642'	3642'	3638'	3639'	3597'	3637'
	SURFACE CASING:						
	Top of Cement	Surface	Surrace	Surface	Surface	Surface	Surface
	TOC Determined by	Circulated	Circulated	Circulated	Circulated	Calculated	Circulated
	Size & Depth of Csg	8 5/8" @ 253'	8 5/8" @ 300'	8 5/8" @ 300'	8 5/8" @ 355'	8 5/8" @ 202'	8 5/8" @ 304'
	Sacks of Cement	190	200	280	250	100	200
	Hole Size	12 1/4"	12 1/4"	12 1/4"	12 1/4" assumed	12 1/4" assumed	12 1/4"
	2 3/8" Tubing (plastic coated)						
	PRODUCTION CASING:						
	Top of Cement	Surface	40'	16'	205'	1112'	Surface
	TOC Determined by	Circulated	Calculated	Calculated	Calculated	Calculated	Circulated
	Size & Depth of Csg	4 1/2" @ 1809'	5 1/2" @ 1815'	5 1/2" @ 1920'	4 1/2" @ 1874'	4 1/2" @ 1871'	5 1/2" @ 1877'
	Sacks of Cement	480	350	375	360	200	400
	Hole Size	7 7/8"	7 7/8"	7 7/8"	7 7/8"	7 7/8"	7 7/8"
	Approx. Pkr Depth	1690'	1679'	1724'	1696'	1633'	1697'
	Perforations	1740' - 1764'	1729' - 1750'	1774' - 1793'	1746' - 1772'	1683' - 1699'	1747' - 1797'
	Total Depth	1813'	1850'	1925'	1875'	3001'	1877'
	Plug Back Depth	1783'	1815'	1920'	1846'	1829'	1834'
						Well drilled to 3001' and P&A'd in 1956 No record of where plugs were set. Cleaned out to 2100' 8/85, 4 1/2" set at 1871'	

ALL WELLS:
2 3/8" Tubing internally plastic coated.
Model AD-1 Tension Packer set within 100' of top perf.
Injection formation: Penrose Sand member of Queen formation
Field: High Lonesome (Queen)
All wells were originally producers and will be converted to injection
There are no known overlying or underlying oil or gas zones.



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WEST HIGH LONESOME
PENROSE SAND UNIT

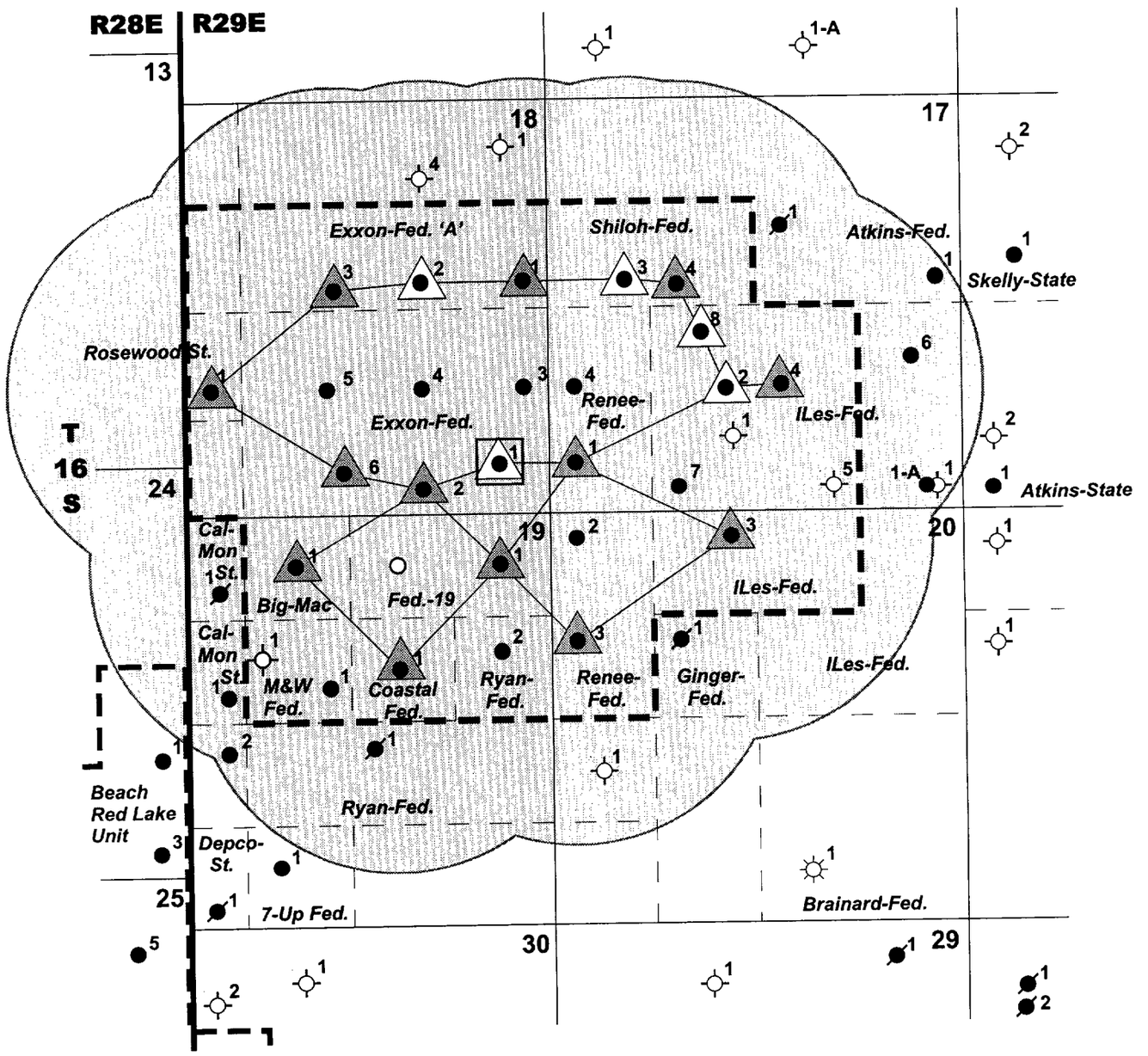
Form C108 Item V.

2 Mile Radius and
1/2 Mile Radius Area of Review

0 2000 4000

Eddy County, New Mexico Scale : 1"=4000'

JMR Land Map 3.20.1



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Injector Phase I

Injector Phase II

Drill Producer

Central Battery

Beach Exploration, Inc.

WEST HIGH LONESOME
PENROSE SAND UNIT

Form C108 Item V.

AREA OF REVIEW

1/2 MILE RADIUS - ALL INJECTORS

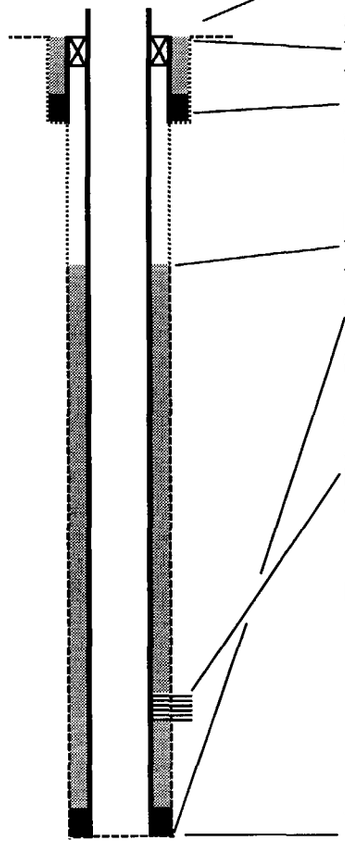
0 1000 2000

Eddy County, New Mexico Scale : 1"=2000'

JMR March 2001

Beach Exploration, Inc.
Proposed West High Lonesome Penrose Sand Unit
Area of Review - Unit Producing Wells
Data Tabulation
Form C-108, Item VI

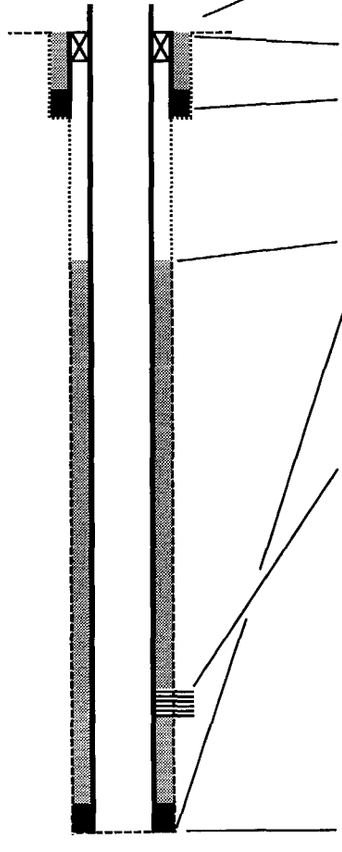
TYPICAL SCHEMATIC



Operator	Beach Expl	Beach Expl	Beach Expl	Beach Expl	Beach Expl	Beach Expl
Lease & Well #	Exxon Federal #3	Exxon Federal #4	Exxon Federal #5	Renee Federal #4	Iles Federal #7	Renee Federal #2
Location	1650' FSL 330' FEL	1650' FSL 1650' FEL	1650' FSL 1835' FWL	1650' FSL 330' FWL	330' FSL 1650' FWL	330' FNL 330' FWL
Sec.-Unit, Twp., Rge.	18-I, 16S, 29E	18-J, 16S, 29E	18-K, 16S, 29E	17-L, 16S, 29E	17-N, 16S, 29E	20-D, 16S, 29E
Date Drilled	Nov-85	Apr-86	Aug-86	Jan-85	Mar-86	Sep-85
G.L. Elev	3642'	3653'	3608'	3626'	3648'	3636'
SURFACE CASING:						
Top of Cement	Surface	Surface	Surface	Surface	Surface	Surface
TOC Determined by	Circulated	Circulated	Circulated	Circulated	Circulated	Circulated
Size & Depth of Csg	8 5/8" @ 303'	8 5/8" @ 333'	8 5/8" @ 303'	8 5/8" @ 250'	8 5/8" @ 292'	8 5/8" @ 300'
Sacks of Cement	235	175	250	250	250	200
Hole Size	12 1/4"	12 1/4"	12 1/4"	12 1/4"	12 1/4"	12 1/4"
PRODUCTION CASING:						
Top of Cement	Surface	Surface	Surface	78'	72'	63'
TOC Determined by	Circulated	Circulated	Circulated	Calculated	Calculated	Calculated
Size & Depth of Csg	4 1/2" @ 1818'	4 1/2" @ 1800'	4 1/2" @ 1715'	5 1/2" @ 1839'	5 1/2" @ 1842'	5 1/2" @ 1840'
Sacks of Cement	700	500	450	370	350	350
Hole Size	7 7/8"	7 7/8"	7 7/8"	7 7/8"	7 7/8"	7 7/8"
COMPLETION:						
Zone	Penrose	Penrose	Penrose	Penrose	Penrose	Penrose
Perforations	1717' - 1741'	1714' - 1731'	1639' - 1652'	1721' - 1738'	1767' - 1787'	1760' - 1783'
Stimulation	Acidize w/1500gal Frac w/18,600gal gel+ 27,000# sand	Acidize w/1200gal Frac w/20,000gal gel+ 42,000# sand	Acidize w/1200gal Frac w/20,000gal gel+ 42,000# sand	Acidize w/1000gal Frac w/30,000gal gel+ 50,000# sand	Acidize w/1000gal Frac w/30,000gal gel+ 49,000# sand	Acidize w/1000gal Frac w/30,000gal gel+ 43,000# sand
POTENTIAL:						
Method	Pumping	Pumping	Pumping	Pumping	Pumping	Pumping
BOPD	80	89	79	100	84	30
BWPD	0	29	Trace	15	13	5
MCFPD	48	42	100	38	TSTM	TSTM
API gravity	32.6	36.4	38	34	34	no record
Total Depth	1820'	1800'	1715'	1850'	1850'	1850'
Plug Back Depth	1793'	1791'	1711'	1839'	1841'	1840'

Beach Exploration, Inc.
Proposed West High Lonesome Penrose Sand Unit
Area of Review - Unit Producing Wells
Data Tabulation
Form C-108, Item VI

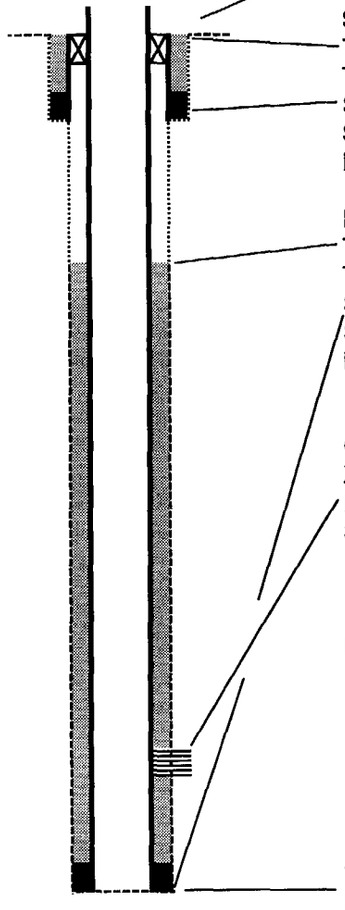
TYPICAL SCHEMATIC



Operator	Beach Expl	Beach Expl
Lease & Well #	M&W Federal #1	Ryan Federal #2
Location	2210' FNL 1833' FWL	1780' FNL 660' FEL
Sec.-Unit, Twp., Rge.	19-F, 16S, 29E	19-H, 16S, 29E
Date Drilled	Nov-85	Apr-82
G.L. Elev	3640'	3630'
SURFACE CASING:		
Top of Cement	Surface	Surface
TOC Determined by	Calculated	Circulated
Size & Depth of Csg	8 5/8" @ 290'	8 5/8" @ 348'
Sacks of Cement	175	225
Hole Size	12 1/4" assumed	12 1/4"
PRODUCTION CASING:		
Top of Cement	Surface	500'
TOC Determined by	Calculated	Temp Survey
Size & Depth of Csg	5 1/2" @ 1972'	5 1/2" @ 2300'
Sacks of Cement	1000	650
Hole Size	7 7/8" assumed	7 7/8"
COMPLETION:		
Zone	Penrose	Penrose
Perforations	1734' - 1746'	1688' - 1804'
Stimulation	Acidize w/1000gal	Acidize w/1500gal
	Frac w/17,000gal wtr+	Frac w/50,000gal gel+
	38,500# sand	60,000# sand
POTENTIAL:		
Method	Pumping	Pumping
BOPD	80	19
BWPD	no record	0
MCFPD	no record	10
API gravity	no record	31.7
		CIBPs @1645' & 1817'
Total Depth	1974'	2310'
Plug Back Depth	1972'	2227'

Beach Exploration, Inc.
Proposed West High Lonesome Penrose Sand Unit
Area of Review - Offset Wells
Data Tabulation
Form C-108, Item VI

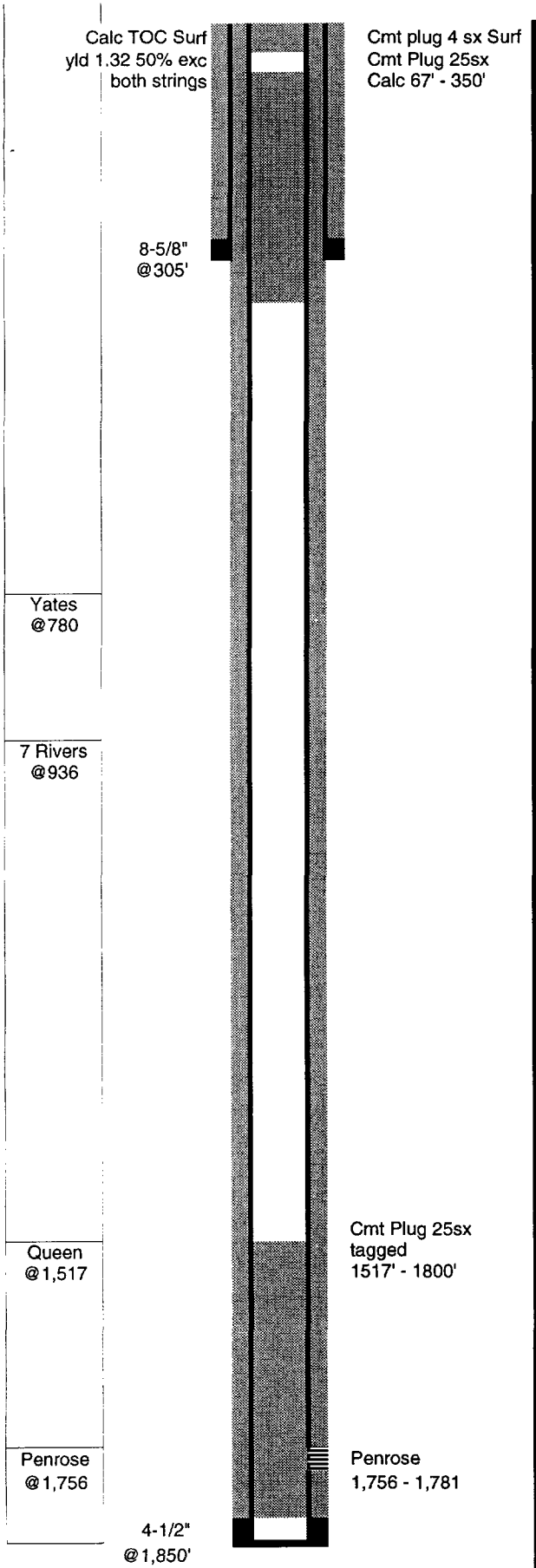
TYPICAL SCHEMATIC



Operator	Mack Energy Corp.	Beach Expl	Beach Expl	Aspen Pumping Service	Aspen Pumping Service
Lease & Well #	Atkins Federal #1	Iles Federal #1-A	Iles Federal #6	Cal-Mon State #1	Cal-Mon State #2
Location	2310' FNL 330' FEL	330' FSL 345' FEL	1980' FNL 660' FEL	2310' FNL 512' FWL	22260' FSL 512' FWL
Sec.-Unit, Twp., Rge.	17-H, 16S, 29E	17-P, 16S, 29E	17-I, 16S, 29E	19-E, 16S, 29E	19-L, 16S, 29E
Date Drilled	Apr-56	Aug-39	Mar-57	Oct-87	Apr-88
G.L. Elev	3653'	3655'	3648'	3584'	3632'
SURFACE CASING:					
Top of Cement	Surface	Surface	Surface	Surface	Surface
TOC Determined by	Circulated	Unknown	Circulated	Calculated	Calculated
Size & Depth of Csg	8 5/8" @ 450'	8 1/4" @ 291'	8 5/8" @ 315'	10 3/4" @ 200'	10 3/4" @ 171'
Sacks of Cement	unknown	70	150	100	60
Hole Size	12 1/4" assumed	11" assumed	12 1/4"	12 1/4" assumed	12 1/4" assumed
PRODUCTION CASING:					
Top of Cement	1317'	544'	Surface	1271'	1021'
TOC Determined by	Calculated	Caluclated	Circulated	Calculated	Calculated
Size & Depth of Csg	5 1/2" @ 1825'	7" @ 1620'	4 1/2" @ 1825'	4 1/2" @ 1658'	7" @ 1803'
Sacks of Cement	100	100	800	100	200
Hole Size	7 7/8" assumed	8"	7 7/8"	7 7/8" assumed	9 1/2" assumed
		5 1/2" liner 1470' - 1735' cmt'd 85sx TOC 1540' by temp survey			
COMPLETION:					
Zone	Penrose	Penrose	Penrose	Penrose	Penrose
Perforations	1774' - 1799'	1735'-1835' (open hole)	1778' - 1802'	1658'-1678' (open hole)	1719' - 1733'
Stimulation	Sand Frac w/10,000gal + assumed 10,000# sand	1801'-1821' pay interval Shot w/90 qts nitro	Sand Frac w/15,000 gal +15,000# sand	1658'-1678' pay interval Natural completion	Natural completion
POTENTIAL:					
Method	Pumping	Pumping	Pumping	Pumping	Pumping
BOPD	100	2	20	7	40
BWPD	not reported	not reported	not reported	0	Trace
MCFPD	not reported	not reported	not reported	TSTM	TSTM
API gravity	not reported	not reported	not reported	not reported	not reported
Total Depth	1825'	1835'	1825'	1678'	1804'
Plug Back Depth	1825'	1835'	1810'	1678'	1790'

Beach Exploration, Inc.
Proposed West High Lonesome Penrose Sand Unit
Area of Review - Plugged Wells (wellbore schematics attached)
Form C-108, Item VI

	Operator	Lease & Well #	Location	Sec.-Unit, Twp., Rge.
1.	Suntex Resources, Inc.	Shiloh Federal #1	1650' FNL 2308' FEL	17-G, 16S, 29E
2.	Butler & Horne	Iles #1	990' FSL 2310' FWL	17-N, 16S, 29E
3.	George Atkins	Iles #5	330' FSL 1650' FEL	17-O, 16S, 29E
4.	B.H. Nolen / George Atkins	Iles #1	330' FSL 330' FEL	17-P, 16S, 29E
5.	Hondo Oil & Gas	Lackey Federal	660' FNL 660 FEL	18-A, 16S, 29E
6.	Beach Exploration, Inc.	Exxon Federal "A" #4	990' FNL 1650' FEL	18-B, 16S, 29E
7.	McClellan Oil Corp.	Cal-Mon State #1	990' FNL 421' FWL	19-D, 16S, 29E
8.	Enron Oil & Gas Co.	Sabres "19" Fed. Com. #1	1846' FNL 926' FWL	19-F, 16S, 29E
9.	Upland Production Co.	Exxon ERL Federal #1	2310' FSL 2310 FEL	19-J, 16S, 29E
10.	Suntex Resources, Inc.	Ginger Federal #1	1650' FNL 1650' FWL	20-F, 16S, 29E
11.	Raymond Smith	Hondo #1	1980' FSL 660' FWL	20-L, 16S, 29E



Shiloh Federal #1

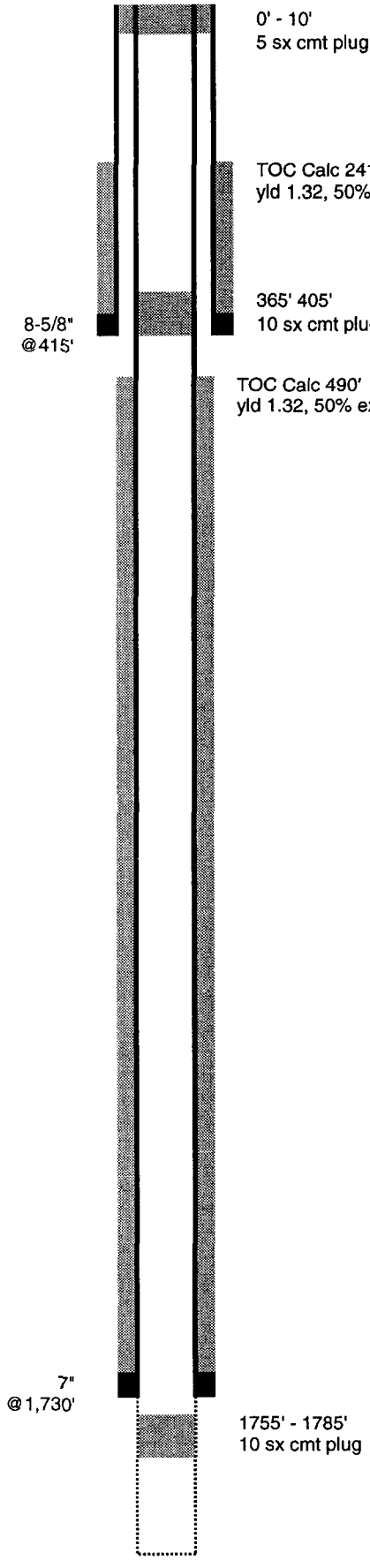
GL:	3,656			**Status:**	P&A
KB:				**Perfs:**	1756' - 1781'
TD:	1,850				
PBD:	1,836			**API:**	30-015-25525
Fr. Wtr:					
Legal:	1,650	from	N	**NM Lse:**	NMLC062996B
	2,308	from	E	**Field:**	High Lonesome (Queen)
Section:	17-G				
Township:	16S			**Logs:**	
Range:	29E				
County:	Eddy			**Archeological:**	

Casing	Wt	Type	Set	Cmt	Hole	TOC	Method
8-5/8"			305	250	12 1/4"es	Surf	Calc
4-1/2"			1,850	450	7 7/8"est	Surf	Calc

3-Jan-86 Spud well
Suntex Resources, Inc. Shiloh Federal #1

Penrose Completion
Perforate (1756 - 1781)
Acid w/1000gal, Sand and Water frac w/28Mgal and 50M# sd
15-Mar-87 Potential: Pump 2 BOPD 28 API, ? BWPD, NR MCFPD

15-Mar-87 **Plugged**



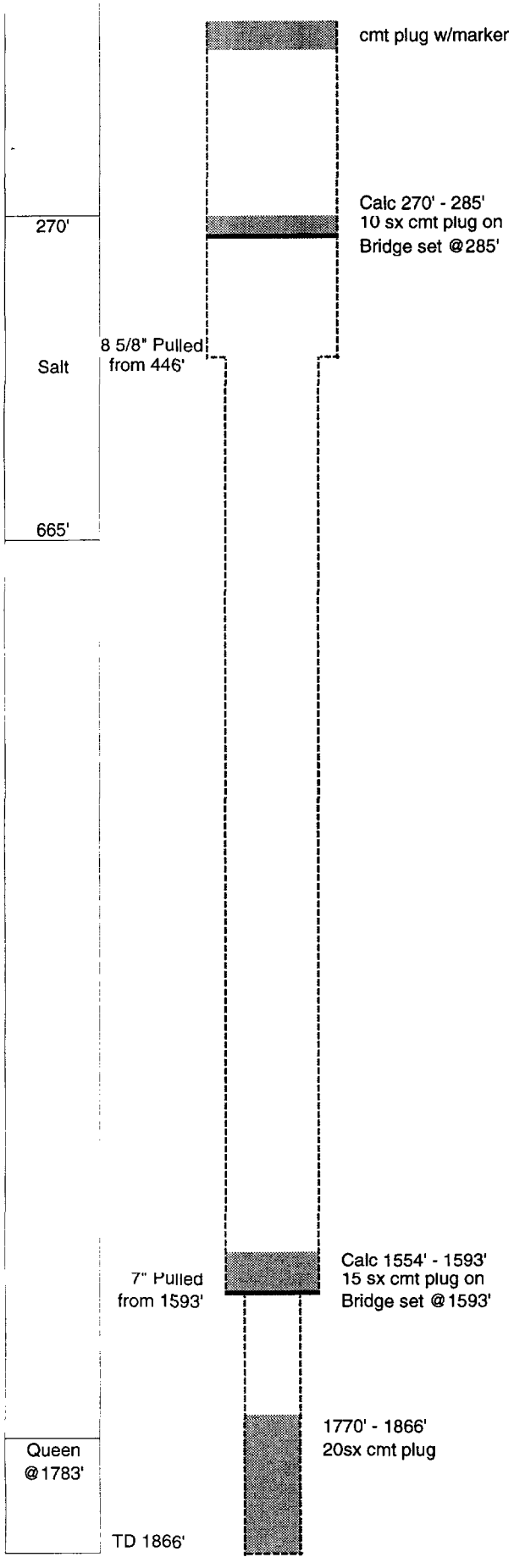
Butler & Horne - Iles #1

GL:					**Status:**	D&A	
KB:	3,647				**Perfs:**		
TD:	1,920						
PBD:					**API:**	30-015-	
Fr. Wtr:							
Legal:	990	from	S		**NM Lse:**	NML 046119A	
	2,310	from	W		**Field:**	High Lonesome (Queen)	
Section:	17-N						
Township:	16S				**Logs:**		
Range:	29E						
County:	Eddy						
					Archeological:	none	

Casing	Wt	Type	Set	Cmt	Hole	TOC	Method
8 5/8"			415	50	11" est	241	Calc 50% exc
7"			1,730	100	7 7/8"est	490	Calc 50% exc

May-40 Spud well
Butler & Horne Drilling Co. and A.J. Frasier - Iles #1

Jul-41 **Plug Well**



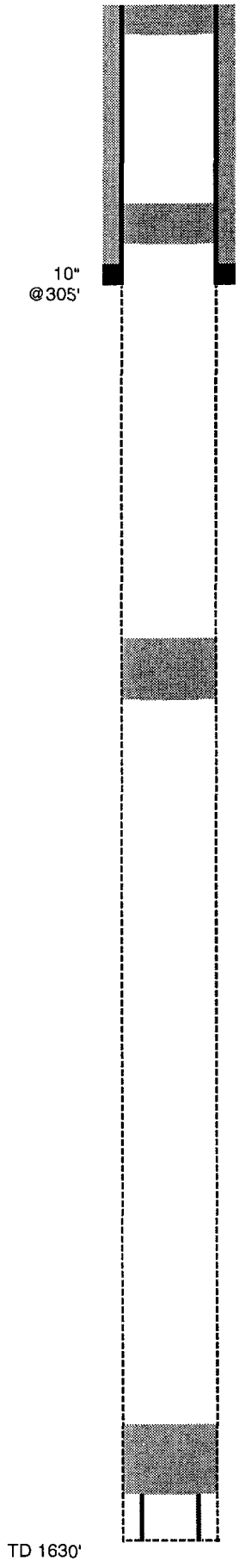
George Atkins - Iles #5

GL:				**Status:**	D&A
KB:	3,655			**Perfs:**	
TD:	1,866				
PBD:				**API:**	30-015-
Fr. Wtr:					
Legal:	330	from	S	**NM Lse:**	NML 046119A
	1,650	from	E	**Field:**	High Lonesome (Queen)
Section:	17-O				
Township:	16S			**Logs:**	
Range:	29E				
County:	Eddy				
				Archeological:	none

Casing	Wt	Type	Set	Cmt	Hole	TOC	Method
8 5/8"			446	0	11" est	Csg pulled from hole	
7"			1,593	0	7 7/8"est	Csg pulled from hole	

Sep-54 Spud well
George Atkins (J.C. Clower / agent) - Iles #5

Oct-54 **Plug Well**



B.H. Nolen / George Atkins - Iles #1

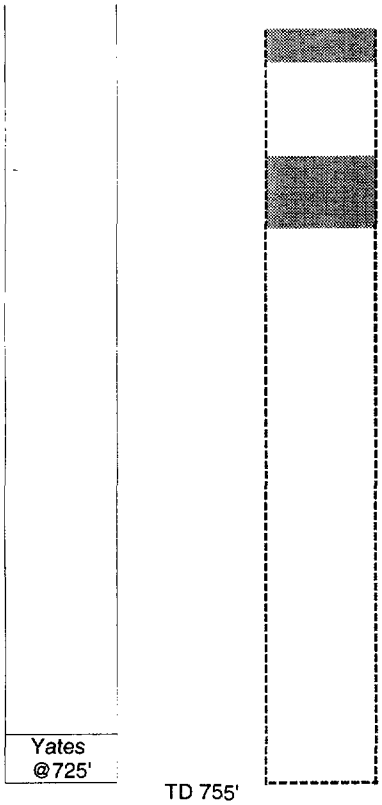
GL:
KB: 3,655
TD: 1,630
PBD:
Fr. Wtr:
Legal: 330 from S, 330 from E
Section: 17-P
Township: 16S
Range: 29E
County: Eddy

Status: D&A
Perfs:
API: 30-015-
NM Lse: NML 046119
Field: High Lonesome (Queen)
Logs:
Archeological: none

Casing	Wt	Type	Set	Cmt	Hole	TOC	Method
10"			305	40	11" est	Surf	Circulated
8 1/4"			1,630	0	Bottom 30' collapsed left in hole remainder of 8 1/4" pulled		

Jul-39 Spud well
B.H. Nolen (George Atkins) - Iles #1

Oct-41 **Plug Well**



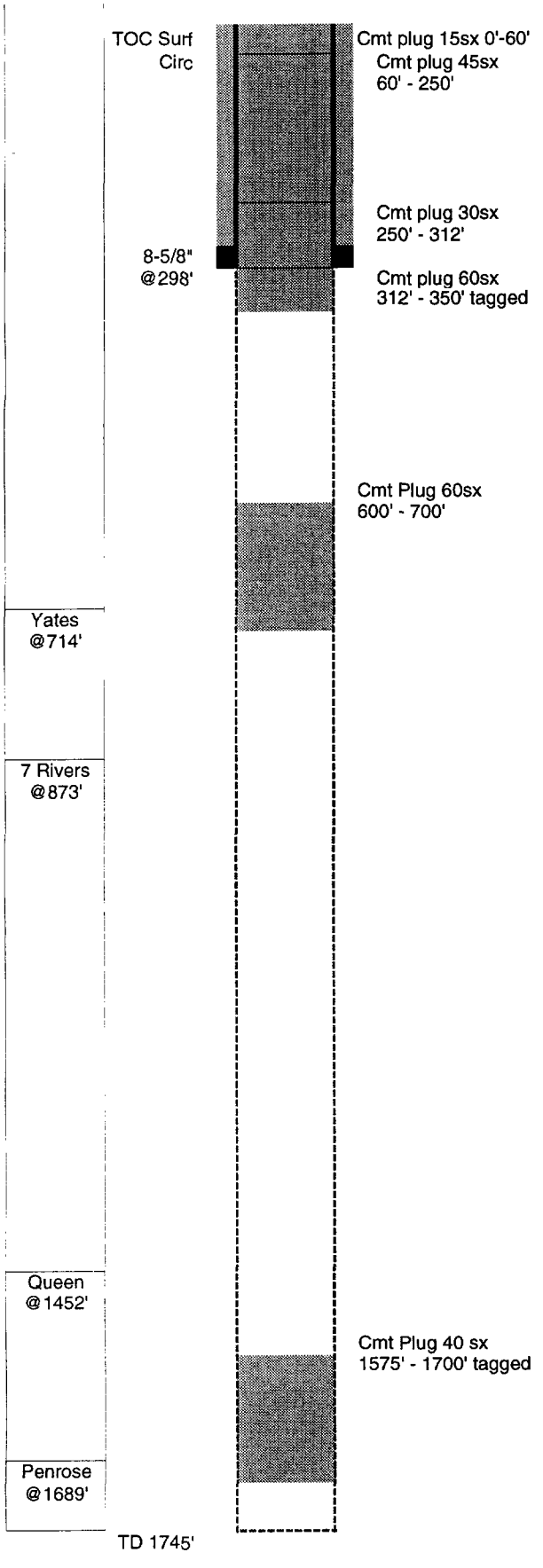
Lackey Federal #1

GL:	3,653			**Status:**	D&A
KB:				**Perfs:**	none (open hole)
TD:	755				
PBD:	755			**API:**	30-015-
Fr. Wtr:					
Legal:	660	from	N	**NM Lse:**	
	660	from	E	**Field:**	
Section:	18-A				
Township:	16S			**Logs:**	
Range:	29E				
County:	Eddy			**Archeological:**	

Casing	Wt	Type	Set	Cmt	Hole	TOC	Method
no casing set					7 7/8" est		

28-Oct-62 Spud well
Hondo Oil & Gas - Lackey Federal #1

5-Nov-62 **Plugged**



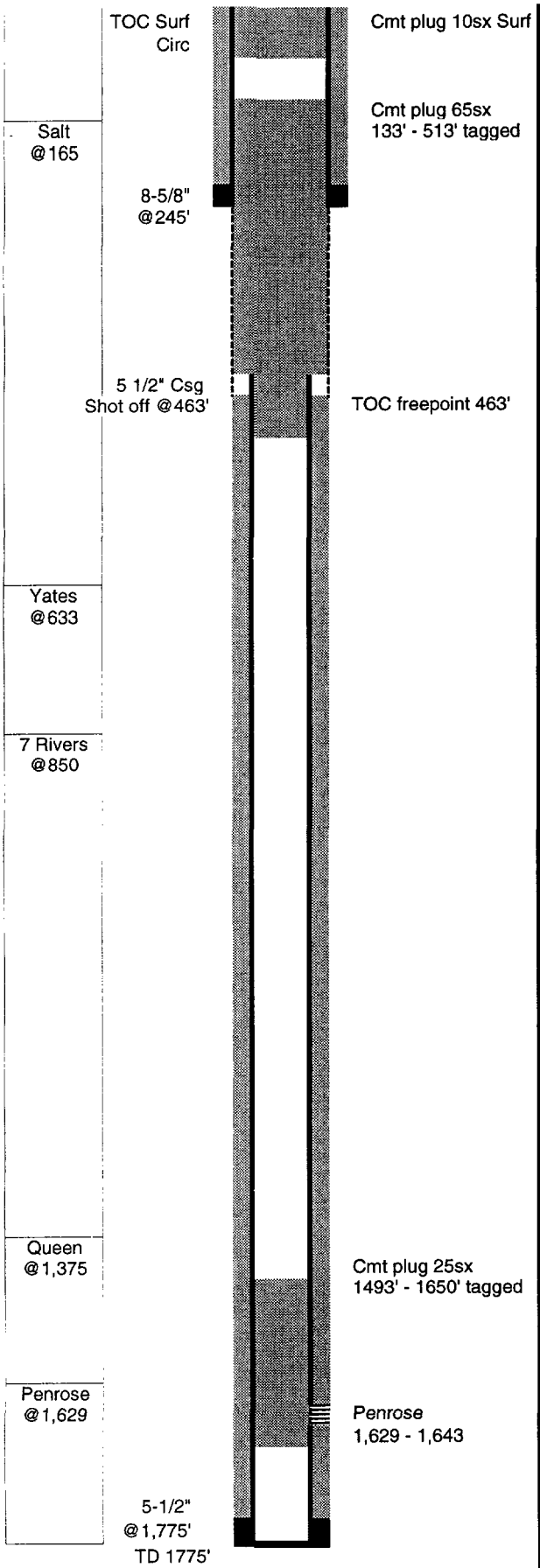
Exxon Federal "A" #4

GL:	3,660			**Status:**	D&A
KB:	3,668			**Perfs:**	none
TD:	1,745				
PBD:	1,745			**API:**	30-015-26072
Fr. Wtr:					
Legal:	990	from	N	**NM Lse:**	26072
	1,650	from	E	**Field:**	High Lonesome (Queen)
Section:	18-B				
Township:	16S			**Logs:**	GR, DEN, NEU, DLL
Range:	29E				
County:	Eddy			**Archeological:**	

Casing	Wt	Type	Set	Cmt	Hole	TOC	Method
8-5/8"	24 & 32	J55 ST&C	298	250	12-1/4"	Surf	Circulated

1-Oct-89 Spud well
Beach Exploration's Exxon Federal "A" #4

4-Oct-89 **Plugged - no completion**



Cal-Mon State #1

GL:	3,580			**Status:**	P&A
KB:				**Perfs:**	1629' - 1643'
TD:	1,775				
PBD:	1,775			**API:**	30-015-25487
Fr. Wtr:					
Legal:	990	from	N	**NM Lse:**	LG4079
	421	from	W	**Field:**	High Lonesome (Queen)
Section:	19-D				
Township:	16S			**Logs:**	
Range:	29E				
County:	Eddy			**Archeological:**	none

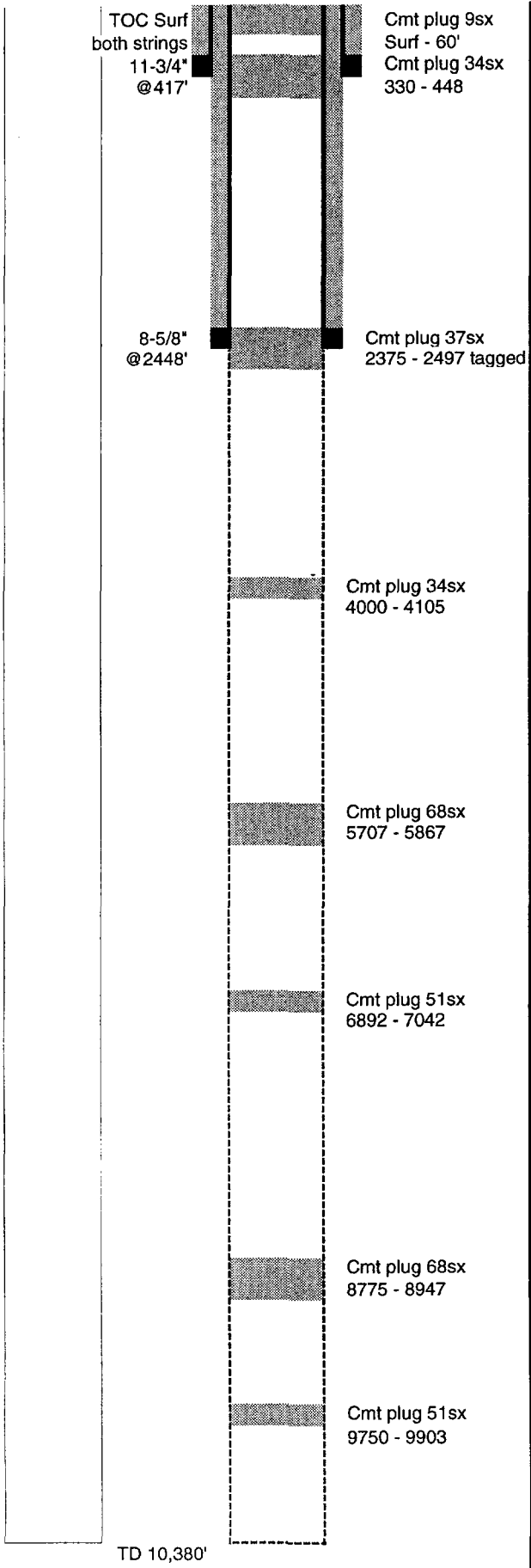
Casing	Wt	Type	Set	Cmt	Hole	TOC	Method
8-5/8"			245	250	12-1/4"	Surf	Circulated
5-1/2"			1,775	350	7-7/8"	463'	Csg Pulled

19-Dec-85 Spud well
McClellan Oil Corp. - Cal-Mon State #1

Penrose Completion

16-Jan-86 Perforated: (1629' - 1643')
Acid w/1000gal, SWF frac w/22Mgal 32M# sand
Potential: Pump 7 BOPD 34 API, 1 BWPD, 10 MCFPD GOR 1400

31-Jan-89 Plugged



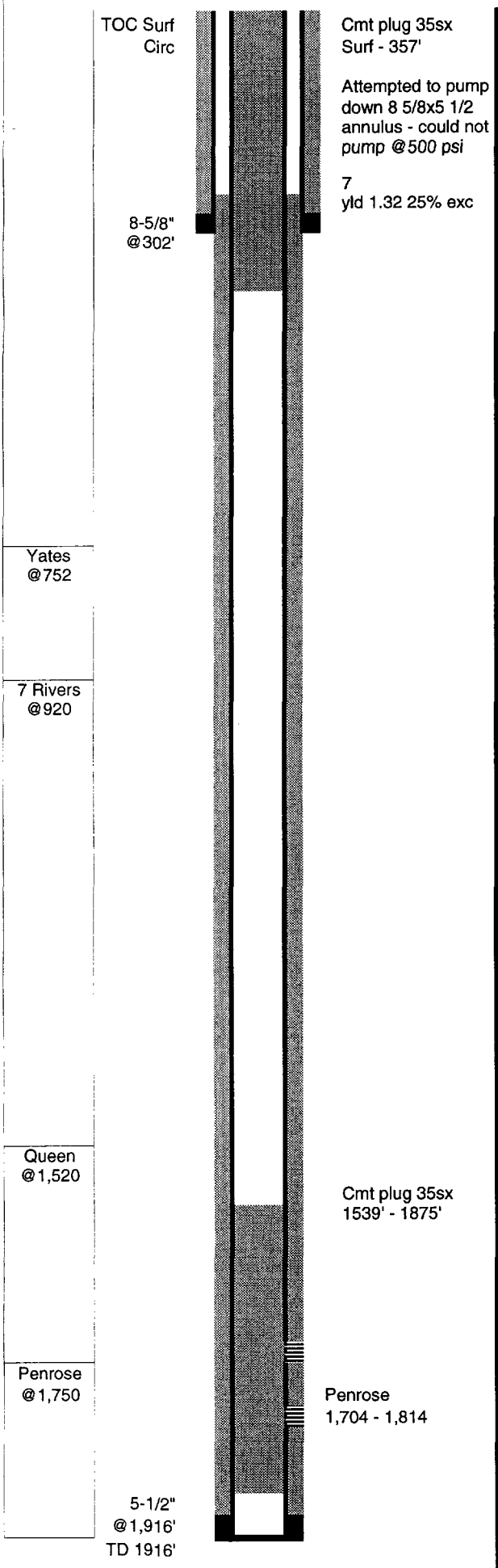
Sabres "19" Fed. Com. #1

GL:	3,692			**Status:**	D&A
KB:				**Perfs:**	none
TD:	10,380				
PBD:	10,380			**API:**	30-015-30461
Fr. Wtr:					
Legal:	1,846	from	N	**NM Lse:**	NM 55927
	926	from	W	**Field:**	Wildcat Morrow
Section:	19-F				
Township:	16S			**Logs:**	
Range:	29E				
County:	Eddy			***Archeological:***	*none*

Casing	Wt	Type	Set	Cmt	Hole	TOC	Method
11-3/4"	42.00	H40 ST&C	417	290	14 3/4"	Surf	Circulated
8-5/8"	32.00	J55 LT&C	2,448	685	11'	Surf	Circulated
					7 7/8"		

8-Nov-98 Spud well
Enron Oil & Gas Company - Sabres "19" Fed. Com #1

29-Nov-98 plugged



Exxon ERL Federal #1

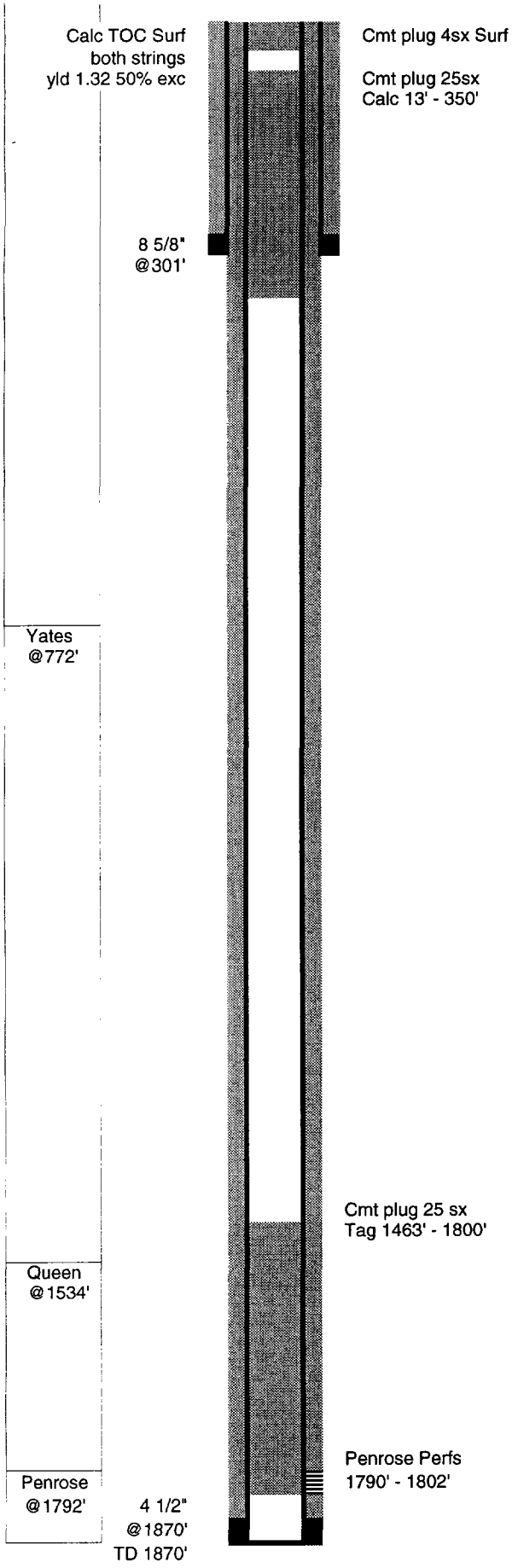
GL:	3,635			**Status:**	P&A
KB:				**Perfs:**	1704' - 1814'
TD:	1,916				
PBD:	1,875			**API:**	30-015-25324
Fr. Wtr:					
Legal:	2,310	from	S	**NM Lse:**	NM9987
	2,310	from	E	**Field:**	High Lonesome (Queen)
Section:	19-J				
Township:	16S			**Logs:**	
Range:	29E				
County:	Eddy			**Archeological:**	none

Casing	Wt	Type	Set	Cmt	Hole	TOC	Method
8-5/8"			302	200	12 1/4"es	Surf	Circulated
5-1/2"			1,916	270	7-7/8"	271'	Calc 25%exc

1-Jul-85 Spud well
Upland Production Co. - Exxon "ERL" Federal #1

20-Jul-85 ***Penrose Completion***
Perforated: (1704 - 1814) 1704,09,66,68,70,72,74,76,86,1800,02,07,10,14
Acid w/1500gal, SWF frac w/28Mgal 59.6M# sand
Potential: Flow 6 BOPD, ? BWPD, 13 MCFPD GOR 2100 FTP 20 psi 31 API

5-Aug-87 Plugged



Ginger Federal #1

GL:	3,637			**Status:**	P&A
KB:				**Perfs:**	1790' - 1802'
TD:	1,870				
PBD:	1,840			**API:**	30-015-25515
Fr. Wtr:					
Legal:	1,650	from	N	**NM Lse:**	NMLC046119A
	1,650	from	W	**Field:**	High Lonesome (Queen)
Section:	20-F				
Township:	16S			**Logs:**	
Range:	29E				
County:	Eddy			**Archeological:**	

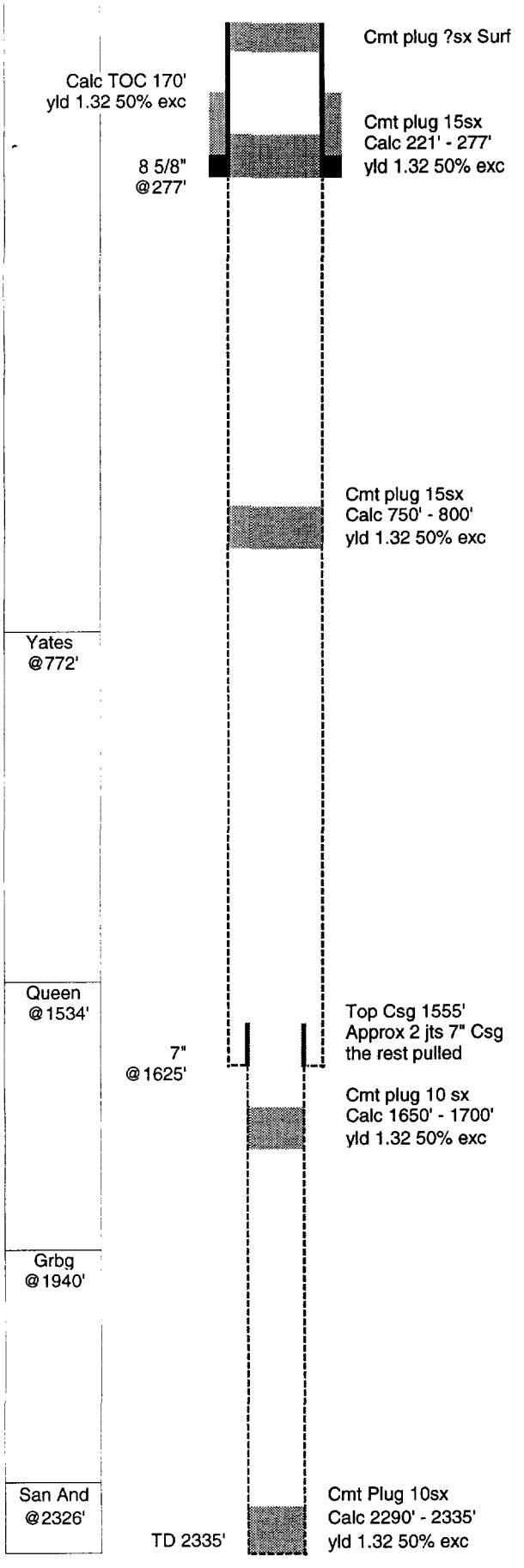
Casing	Wt	Type	Set	Cmt	Hole	TOC	Method
8 5/8"			301	250	12 1/4"es	Surf	Calc 50% exc
4 1/2"			1,870	500	7 7/8"est	Surf	Calc 50% exc

30-Dec-85 Spud well
Suntex Resources - Ginger Federal #1

Penrose Completion

15-Mar-86 Perf (1790'-1802')
acid w/1Mgal, SWFfrac w/19Mgal fluid 36M# sand
IP pumping 2 BOPD NR BWPD NR MCFPD 29 API

12-Mar-87 Plugged



Hondo #1

GL:	3,631			**Status:**	D&A
KB:				**Perfs:**	1625' - 2335 (open hole)
TD:	2,335				
PBD:	2,335			**API:**	30-015-
Fr. Wtr:					
Legal:	1,980	from	S	**NM Lse:**	NML02844
	660	from	W	**Field:**	High Lonesome (Queen)
Section:	20-L				
Township:	16S			**Logs:**	
Range:	29E				
County:	Eddy			**Archeological:**	

Casing	Wt	Type	Set	Cmt	Hole	TOC	Method
8 5/8"			277	50	12 1/4"es	170	Calc 50% exc
7"			1,625	??	7 7/8"est	??	
					6 1/4"est		

29-Aug-59	Spud well **Raymond Smith - Hondo #1**
26-Sep-59	Plugged - no completion show oil 1805' - 1815, 1828' - 1836'

Waterflood Feasibility Study
High Lonesome Queen Field
Eddy County, New Mexico

Prepared For
Beach Exploration, Inc.

T. SCOTT HICKMAN & ASSOCIATES, INC.
PETROLEUM ENGINEERS

January 27, 1993

Beach Exploration, Inc.
800 N. Marienfeld
Suite 200
Midland, TX 79701

Attention: Mr. Hal Gill

Gentlemen:

Re: Waterflood Feasibility Study
High Lonesome Queen Field
Eddy County, New Mexico

In accordance with Mr. Gills' request, we have conducted a waterflood feasibility study of selected leases in the High Lonesome Queen Field, Eddy County, New Mexico. The results of this study along with the waterflood economics are discussed in the attached report.

Net oil and gas reserves shown on Tables 6 through 8 are estimated quantities of crude oil attributed to the composite revenue interests being evaluated after deduction of royalty and/or overriding royalty interests. The 1987 Oil and Gas Reserve Definitions, as endorsed by the SPE and SPEE, were used to classify the reserves. Future net revenue was adjusted for capital expenditures, operating costs, ad valorem taxes and wellhead taxes, but no consideration was given to Federal income taxes or any encumbrances that might exist against the evaluated interest. Present worth future net revenue shows the time value of money at certain discount rates, but does not represent our estimate of fair market value.

Oil reserves were determined using industry-accepted methods including extrapolation of established performance trends, volumetric calculations and analogy to similar producing zones. Since there are currently no gas sales from the leases, no gas reserves were assigned for the proposed unit area.

In the preparation of this report, we have reviewed for reasonableness, but accepted without independent verification information furnished by Beach Exploration, Inc. with respect to interest factors, current prices, operating costs,

investments and various other data. We are qualified to perform engineering evaluations and do not claim any expertise in accounting, legal or environmental matters. As is customary in the profession, no field inspection was made of the properties nor have we verified that all operations are in compliance with any states and/or Federal conservation, pricing and environmental regulations that apply to them.

At the client's request, an oil price of $18/BBL was held constant for the life of the project. Operating costs and capital investments were also held constant. No equipment salvage value or abandonment costs were included for the properties. The development and operating costs for the project were estimated by Beach Exploration based on the specifications furnished by us.

This study was performed using industry-accepted principles of engineering and evaluation that are predicated on established scientific concepts. However, the application of such principles involves extensive judgment and assumptions and is subject to changes in performance data, existing technical knowledge, economic conditions and/or statutory provisions. Consequently, our reserve estimates are furnished with the understanding that some revisions will probably be required in the future.

This report is solely for the information of and the assistance to Beach Exploration, their investors and others authorized by Beach in their evaluation of the waterflood potential in the High Lonesome Queen Field and is not to be used, circulated, quoted or otherwise referred to for any other purpose without the express written consent of the undersigned except as required by law. Persons other than those to whom this report is addressed or those authorized by the addressee shall not be entitled to rely upon the report unless it is accompanied by such consent. Data utilized in this report will be maintained in our files and are available for your use.

Yours very truly,

T. SCOTT HICKMAN & ASSOC., INC.

J. Louis Moseley, P.E.

glb
attachments

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DISCUSSION

INTRODUCTION

The High Lonesome Queen Field, located approximately 11 miles northwest of Loco Hill, Eddy County, New Mexico was discovered in November 1939 with the completion of the B.H. Nolen #1 Iles. The field has produced approximately 4.5 MMBBL of oil and 1.5 BCF of gas to date from the Queen (Penrose) sand. The field currently includes 45 producing, 7 injection and 10 shut-in or temporarily abandoned wells.

Waterflood operations have been on going in the field in Sections 11 through 16 of T16S R39E, N.M.P.M. since 1957. The waterflood feasibility study area, covering the proposed West High Lonesome Penrose Sand Unit (WHLPSU), includes Sections 17 through 20.

CONCLUSIONS

1. The Queen (Penrose) sand is continuous throughout the field and the proposed Unit area.
2. Unitization is required to efficiently waterflood the reservoir.
3. Original oil-in-place (OOIP) for the proposed West High Lonesome Penrose Sand Unit area is estimated at 6119 MBBL.
4. Primary reserves are estimated at approximately 61 MBBL as of January 1, 1993.
5. Ultimate primary recovery is estimated at 538 MBBL or 8.8% of OOIP.
6. Waterflood reserves for the proposed unit are estimated at 538 MBBL based on a secondary/primary recovery ratio of 1.0.
7. Total waterflood development cost for the proposed unit is estimated at $787,000.
8. Incremental BFIT waterflood economics for the proposed unit indicate unrisked future net revenue of $1,511,000 discounted at 10%, payout of 3.2 years and an income to investment ratio of 4.6 undiscounted. The DCF ROR is estimated at 44%.

RECOMMENDATIONS

1. Unitize proposed unit area shown on Figure 8.
2. Drill and complete 1850' producing well in Unit B Section 19 T16S, R29E.
3. Install 80-acre, 5-spot waterflood pattern as shown on Figure 8.

4. Install supply line and purchase make-up water from the City of Carlsbad's Double Eagle fresh water system.
5. Install injection plant facilities and distribution lines and commence full-scale waterflood operations.
6. Monitor waterflood performance including balancing injection and withdrawals in each pattern to maximize waterflood economics.

GEOLOGY

The High Lonesome Queen Field produces from the Penrose sand at a depth of about 1700' (+1900' subsea). The Penrose is a relatively thin, blanket sand developed in the lower half of the Queen Formation (Guadalupian, Permian). The sand is widespread areally and is 26-32 feet thick in the study area. It dips to the southeast at 100-125 feet/mile (Figure 1).

The High Lonesome Queen Field is one of a series of fields trending northeast-southwest where hydrocarbons are stratigraphically trapped in the Penrose. Figures 2 and 3 illustrate the apparent continuity of the sand development and the long, narrow producing trend. The reservoir producing facies is a gray, very fine - medium grained, and subrounded quartz sandstone cemented with varying amounts of anhydrite and salt. This porous and permeable facies is sandwiched in between tight evaporitic sand in an updip direction and a red, shaley, and non-reservoir facies in the downdip direction. Along this producing trend, porosities average 12% and permeabilities nearly 14 md.

PRIMARY PERFORMANCE

Development drilling in the study area occurred mainly after mid 1985, the most recent being the Beach-Exxon A-Federal No. 3 well completed in June 1989 (Table 1). The wells were usually completed with 4 1/2" or 5 1/2" casing set through the Queen pay interval. The initial fracture treatments utilized 20,000-30,000 gallons gelled water with 1-2 lb/gal of sand concentration. Initial potentials ranged from 3 BOPD for the Norwood-Isles Federal No. 3 to 100 BOPD for the McClellan-Renee Federal No. 4.

The 10 leases and 26 wells within the proposed West High Lonesome Penrose Sand Unit have produced approximately 477 MBBL from the Queen (Penrose) sand as of January 1, 1993. Current production from the proposed unit averages approximately 2.1 BOPD per well. Individual lease production for 1992 year-to-date is shown on Table 2.

Primary reserves for the proposed W. High Lonesome Penrose Sand Unit are estimated at 61 MBBL as of January 1, 1993 based on individual well and composite decline curve analysis. Ultimate primary recovery is estimated at 538 MBBL. Primary performance for the proposed unit area is summarized on Table 2 and shown on Figures 4 and 5.

Declining fluid production associated with declining reservoir pressure, increasing GOR's and negligible water production over the life indicate the primary producing mechanism has been solution gas-drive. The maximum producing rate of approximately 11,000 BOPM occurred in 1986 from 21 producing wells. The composite GOR peaked at approximately 1300 SCF/BBL in 1991 before declining to the present level of less than 1000 SCF/BBL. Currently there are no gas sales from the study area based on available data. The reservoir fluid properties for the proposed unit area are summarized on Table 3.

A ϕh (porosity x net pay) isopach map of the Penrose sand was constructed for the proposed unit area and is shown as Figure 6. All available CNL-FDC wireline porosity logs as shown on Figure 7 were utilized to estimate net pay and ϕh for individual wells. Since core analysis data was not available to establish a porosity-permeability relationship, a 12% porosity cut-off was assumed. The average connate water saturation (Sw) for the Queen (Penrose) sand in the proposed Unit area was estimated to be 30% based on available wireline log data. Gross reservoir pore volume within the proposed unit area was estimated at 1374.55 ac-ft from the ϕh isopach map. The original oil-in-place (OOIP) volume calculated from the ϕh map appears reasonable based on the calculated primary recovery efficiency.

Volumetric calculations for the proposed area are as follows:

$$OOIP = 7{,}758\ \phi\ (1-Sw)\ Ah/Boi$$

Where OOIP = STB
7,758 = STB/Ac-Ft
ϕ Ah = PV, Ac-Ft
Sw = Connate Water Saturation, Frac of PV
Boi = RB/STB
= 7,758 (1-0.3)1374.55/1.22
= 6118.6 MBO

The primary recovery factor (PRF) for the proposed unit area is calculated as follows:

$$PRF = \frac{538\ MBBL}{6118.6\ MBBL} \times 100 = 8.8\%\ of\ OOIP$$

SECONDARY PERFORMANCE

A nominal 80-acre, 5-spot injection pattern utilizing 12 injection and 14 producing wells is recommended for the proposed W. High Lonesome Penrose Sand Unit based on analysis of other Queen (Penrose) waterfloods in the area (Table 4). This includes the proposed producing well to be drilled in Unit B of Section 19).

The proposed unit boundary as shown on Figure 8 should maximize the economics of secondary recovery for the study area. This optimization is achieved by excluding wells with very poor primary recovery (<8MBO) on the south and west side, minimizing the re-plugging liability to the south and east and installing the maximum number of 5-spot patterns utilizing existing wellbores.

The current average oil saturation in the proposed unit area is calculated as follows:

$$So = \frac{(N-Np)\ Bo\ (1-Sw)}{NBoi}$$

Where: So = *Oil Saturation @ 1/1/93, fraction of Pore Volume (Vp)*
N = *OOIP, MSTB*
Np = *Cumulative Oil Production @ 1/1/93, MSTB*
Bo = *Current Oil Formation Volume Factor, RB/STB*
Sw = *Conate Water Saturation, Fraction of PV*
Boi = *Initial oil Formation Volume Factor, RB/STB*

$$So = \frac{(6118.6-477.5)1.05(1-0.3)}{(6118.6)(1.22)}$$

$$= 0.56$$

$$\text{Pore Volume (Vp)} = \frac{NBoi}{1-Sw}$$

$$= \frac{(6118.6)(1.22)}{(1-0.3)}$$

$$= 10{,}664 \text{ MBBL}$$

$$\text{Free Gas Volume (FGV)} = (1-So-Sw)Vp$$
$$= (1-0.56-0.3)(10{,}664 \text{ MBBL})$$
$$= 1493 \text{ MBBL}$$

Fillup-time, assuming an average injection rate of 200 BPD/well, can be estimated as follows:

$$\text{Fillup Time} = \frac{FGV}{\text{Injection Rate}}$$

$$= \frac{1,493,000 \text{ BBL}}{200 \text{ BPD/well} \times 12 \text{ wells} \times 30.4 \text{ days/month}}$$

$$= 20.5 \text{ months}$$

Theoretical waterflood recovery based on volumetric calculations is as follows:

$$\text{Waterflood Recovery} = \frac{7758 \, \phi \, Ah \, (So-Sor)(Ev \times Ep)}{Bo}$$

$$= \frac{7758 \, (1374.55)(0.56-0.315)(0.5 \times 0.67)}{1.22}$$

$$= 717 \text{ MBBL}$$

Where: Sor = Residual oil saturation after waterflood, 0.315 (Roswell Geological Society Symposium)
Ev = Volumetric sweep efficiency, 0.5 (Empirical)
Ep = Project effective injection efficiency, 0.67 (Geometric Factor)

The estimated waterflood recovery utilizing volumetric calculations (717 MBBL) compares favorably with waterflood reserves of 538 MBBL based on a 1.0 S/P (Secondary/Primary Recovery) ratio by analogy. These reserves include those attributed to the proposed drilling well in Unit B of Section 19. Estimated recoveries for other Queen (Penrose) Sand Units on trend are summarized on Table 4.

Flood-start for the proposed unit is assumed to be July 1, 1993. The project effective injection rate is estimated at 48,000 BWPM or 0.67 x 72,000 BWPM. The effective injection rate factor of 0.67 is based on the areal confinment for the proposed injection plan which accounts for peripheral and east end injection losses in the proposed unit.

The estimated peak oil rate of 9000 BOPM or 23 BOPD per producing well was based on the observed performance of analogous Queen (Penrose) Waterfloods in the region adjusted for well spacing. Peak production, which is estimated to occur at fillup in March 1995, was held constant for 12 months before declining at approximately 20% per year for the life of the project (Figure 4).

In our opinion, the potential waterflood oil recovery for each of the leases within the proposed unit area can best be represented by ultimate primary

recovery and it should be utilized as the major parameter in the unit participation formula.

ECONOMICS

The total estimated waterflood development cost of $787,000 for the proposed unit is summarized on Table 5. Operating costs were estimated at $700/well-month for remaining primary operations and $1240/well-month for waterflood operations based on 26 total wells. The estimate for waterflood operations includes the cost of make-up water estimated to be $0.15/BBL. Operating costs were reduced to $14,000/month near the end of waterflood operations to account for the elimination of make-up water and abandonment of uneconomic wells.

The initial injection rate is estimated to be 200 BWPD per well at a maximum wellhead pressure of 1100 psi based on analogy (Table 4). The initial make-up water volume (72,000 BPM) can be purchased from the city of Carlsbad's Double Eagle fresh water system approximately 3 miles from the proposed unit. The cost to install the water supply line from the system to the proposed unit is estimated at $72,000 (Table 5). The cost of the make-up water volume, initially estimated at $10,800/month, should decrease over the life of the project due to re-cycling produced water.

Tables 6, 7 and 8 are the respective cash flow projections for the Total Proved, Proved Developed Producing (PDP) and Proved Undeveloped (PUD) reserve categories. All economics were based on constant prices and costs.

Incremental waterflood (PUD) economics for the proposed unit indicate a rate of return of 44% and payout of 3.2 years on a total waterflood development cost of $787,000.

TABLE 1
WELL DATA
PROPOSED WEST HIGH LONESOME PENROSE SAND UNIT
HIGH LONESOME QUEEN FIELD
EDDY COUNTY, NEW MEXICO

OPERATOR	LEASE	WELL NO.	LOCATION SEC TWN RGE	COMP DATE	CASING RECORDS	PERFS	INITIAL TREATMENTS	INITIAL POTENTIAL BOPD	BWPD	GOR-SCF/BO
BEACH EXPLORATION	EXXON FEDERAL	1	660 FSL 660 FEL 18-16-29	5/30/85	8 5/8-302-225 4 1/2-1840-375	1722-1756	A/950 SF/17,000 X 10,000#	F-70	3	1132
BEACH EXPLORATION	EXXON FEDERAL	2	330 FLS 1650 FEL 18-16-29	10/14/85	8 5/8-343-475 4 1/2-1814-400	1713-1750	A/1500 SGF/18,000 X 15,000#	P-10	3	600
BEACH EXPLORATION	EXXON FEDERAL	3	1650 FSL 330 FEL 18-16-29	11/29/85	8 5/8-304-235 4 1/2-1818-700	1717-1741	SGF/10,500 X 27,000#	P-80		600
BEACH EXPLORATION	EXXON FEDERAL	4	1650 FSL 1650 FEL 18-16-29	4/28/86	8 5/8-333-175 4 1/2-1800-500	1714-1731	A/1200 SGF/20,000 X 42,000#	P-89	29	472
BEACH EXPLORATION	EXXON FEDERAL	5	1650 FSL 1335 FWL 18-16-29	9/14/86	8 5/8-303-250 4 1/2-1715-450	1639-1652	A/1200 SGF/20,000 X 42,000#	P-79		1266
BEACH EXPLORATION	EXXON FEDERAL	6	560 FSL 2035 FWL 18-16-29	12/7/86	8 5/8-307-250 4 1/2-1772-500	1708-1727	A/1200 SF/20,000 X 40,000#	P-50		600
BEACH EXPLORATION	EXXON "A" FEDERAL	1	2310 FNL 330 FEL 18-16-29	10/2/88	8 5/8-311-350 4 1/2-1800-450	1714-1728	A/1200 SGF/20,000 X 42,000 #	P-74	70	135
BEACH EXPLORATION	EXXON "A" FEDERAL	2	2310 FNL 1650 FEL 18-16-29	2/12/89	8 5/8-295-250 4 1/2-1770-550	1702-1722	A/1200 SWF/20,000 X 42,000#	P-28	2	1357
BEACH EXPLORATION	EXXON "A" FEDERAL	3	2410 FNL 1932 FWL 18-16-29	6/9/89	8 5/8-330-250 4 1/2-1705-600	1645-1655	A/1200 SGF/20,000 X 42,000#	P-10	1	2000
BUTLER-HORN	ISLES	1	990 FSL 2310 FWL 17-16-29	8/21/40	8 1/4-415 7-1733-100	P&A				
CLONER, J.C.	ISLES FEDERAL	5	330 FSL 1650 FEL 17-16-29	10/1/54	8 5/8-446 7-1593	P&A				
EASTLAND	COASTAL FEDERAL	1	1980 FNL 1980 FEL 19-16-29	6/20/85	8 5/8-304-200 5 1/2-1877-400	1747-1797	A/1500 SGF/36,540 X 87,900#	P-20	1	2500
HAILE PETROLEUM	MAN FEDERAL	1	2210 FNL 1833 FWL 19-16-29	5/19/86	8 5/8-290-175 5 1/2-1972-1040	1734-1746	A/1000 SGF/33,600 X 55,500#	P-80		
JFG	RYAN FEDERAL	2	1760 FNL 660 FEL 19-16-29	6/21/82	8 5/8-348-225 5 1/2-2310-650	1688-1804	A/1500 SF 50,000 X 60,000#	P-19	0	526
MCCLELLAN OIL	BIG MAC FEDERAL	1	660 FNL 3300 FEL 19-16-29	9/3/85	4 1/2-1871-190	1683-1699	A/500 SGF/20,000 X 31,500#	P-14		
MCCLELLAN OIL	RENEE FEDERAL	1	660 FLS 330 FWL 17-16-29	9/16/85	8 5/8-300-200 5 1/2-1815-350	1729-1750	SWF/31,000 X 50,000#	P-32	4	

TABLE 1

TABLE 1
WELL DATA
PROPOSED WEST HIGH LONESOME PENROSE SAND UNIT
HIGH LONESOME QUEEN FIELD
EDDY COUNTY, NEW MEXICO

OPERATOR	LEASE	WELL NO.	LOCATION SEC TWN RGE	COMP DATE	CASING RECORDS	PERFS	INITIAL TREATMENTS	INITIAL POTENTIAL BOPD	BWPD	GOR-SCF/BO
MCCLELLAN OIL	RENEE FEDERAL	2	330 FNL 330 FWL 20-16-29	9/25/85	8/58-300,250 5 1/2-1840-350	1760-83	A/1000 SWF/30,000 X 43,000#	P-80	5	24
MCCLELLAN OIL	RENEE FEDERAL	3	1650 FNL 330 FWL 20-16-29	12/28/85	8 5/8-300-280 5 1/2-1920-375	1774-93	A/1000 SGF/30,000 X 49,000#	P-85	5	295
MCCLELLAN OIL	RENEE FEDERAL	4	1650 FSL 330 FWL 17-16-29	1/15/86	8 5/8-250-250 5 1/2-1839-370	1721-1738	A/1000 SGF/30,000 X 50,000#	P-100	15	375
NORWOOD	FEDERAL "19"	1	660 FNL 660 FEL 19-16-29	9/30/85	8 5/8-355-250 4 1/2-1874-360	1746-1772	SWF/100,000 X 109,000#	P-17	1	4000
NORWOOD	ISLES FEDERAL	2	1650 FSL 2310 FWL 17-16-29	5/14/40	8 1/4-43 5 1/2-1703-180	OH 1703-1813	100 QTS NITRO	P-20		
NORWOOD	ISLES FEDERAL	3	330 FNL 2310 FWL 20-16-29	6/1/40	8 1/4-330-50 7-1590-100	OH 1590-1820		P-3		
NORWOOD	ISLES FEDERAL	4	1650 FSL 2310 FEL 17-16-29	3/9/53 2/12/54	8 5/8-275-50 7-1740-50	OH 1740-1800	SF/5000	P-25		
NORWOOD OIL	ISLES FEDERAL	7	330 FSL 1650 FWL 17-16-29	4/14/86	8 5/8-292-250 5 1/2-1842-350	1767-1787	A/1000 SGF/30,000 X 49,000#	P-84	13	
NORWOOD OIL	ISLES FEDERAL	8	2310 FSL 1950 FWL 17-16-29	9/16/87	8 5/8-253-190 4 1/2-1509-430	1740-1764	A/1000 SWF/30,000 X 49,000#	P-42	2	524
SUNTEX RESOURCES	SHILOH FEDERAL	3	2310 FNL 988 FWL 17-16-29	1/27/86	8 5/8-311-250 4 1/2-1850-500	1730-1758	A/1000 SGF/28,000 X 50,000#	P-75	43	200
SUNTEX RESOURCES	SHILOH FEDERAL	4	2310 FNL 1650 FWL 17-16-29	6/1/86	8 5/8-309-250 4 1/2-1850-650	1752-1764	A/1000 SGF/10,200 X 24,000#	P-41	24	488

TABLE 2
OPERATOR AND LEASE STATISTICS
PROPOSED W. HIGH LONESOME PENROSE SAND UNIT
HIGH LONESOME QUEEN FIELD
EDDY COUNTY, NEW MEXICO

OPERATOR / LEASE	WELLS		NOMINAL SURFACE ACRES		1992 OIL PROD YTD (8 MO)		CUM OIL PROD @ 9-1-92		PRIMARY RESERVES @ 1-1-93		ULTIMATE PRIMARY RECOVERY	
	NO.	%	TOTAL	%	BBLS	%	BBLS	%	BBLS	%	BBLS	%
Beach Exploration, Inc.												
Exxon Federal	6	24.0	240	22.2	3677	28.9	156528	33.2	14140	22.9	172547	32.1
Exxon Federal-A	3	12.0	120	11.2	1994	15.7	25740	5.5	1587	2.6	27971	5.2
Total	9	36.0	360	33.4	5671	44.6	182268	38.7	15727	25.5	200518	37.3
Eastland Oil Co.												
Coastal Federal	1	4.0	40	3.7	130	1.0	3043	0.6	0.0	0.0	3043	0.6
Halle Petroleum, LTD.												
M&W Federal	1	4.0	40	3.7	1135	8.9	17435	3.7	12305	19.9	30291	5.6
JFG Enterprises												
Ryan Federal	1	4.0	40	3.7	0.0	0.0	9846	2.1	0.0	0.0	9846	1.8
McClellan Oil Corp.												
Big Mac Federal	1	4.0	40	3.7	502	3.9	9745	2.0	2760	4.5	12780	2.4
Renee Federal	4	16.0	160	14.8	1897	14.9	90344	19.2	3163	5.1	94170	17.5
Total	5	20.0	200	18.5	2399	18.8	100089	21.2	5923	9.6	106950	19.9
Norwood Oil Corp.												
Federal 19	1	4.0	80	7.4	22	0.2	4044	0.9	0.0	0.0	4044	0.7
Isles Federal	5	20.0	240	22.2	2181	17.1	115754	24.6	23763	38.3	140347	26.1
Total	6	24.0	320	29.6	2203	17.3	119798	25.5	23763	38.3	144391	26.8
Suntex Energy Corp.												
Shiloh Federal	2	8.0	80	7.4	1195	9.4	38757	8.2	4119	6.7	43257	8.0
Grand Total	25	100.0	1080	100.0	12733	100.0	471236	100.0	61837	100.0	538296	100.0

TABLE 3
Reservoir Fluid Properties
Proposed West High Lonesome Unit
High Lonesome Field
Eddy County, New Mexico

Pi,	740 psi est.
Pb,	1800 psi est.
Oil Gravity,	35° API
Rsi,	490 SCF/BBL
T,	90° F
Boi,	1.22 RB/STB
Bo,	1.05 RB/STB @ current BHP est.@ 100 psi

TABLE 4
Queen (Penrose) Sand Waterflood Projects
High Lonesome and Red Lake Fields
Lea County, New Mexico

Project	Field Section-Township-Range	Area (Ac.)	Primary EUR MBO	Primary EUR MBO/Well	Secondary EUR MBO	Secondary EUR S/P	Injection Pattern	Maximum Wells	Floodstart Year	Average Maximum Injection Rate & Pressure
Vintage Drilling High Lonesome Penrose Ut.	High Lonesome (Queen) Sec. 15-T16S-R29E	480	529	48.1	325	0.61	Partial 40 Ac, 5-Spot	8P + 7I	1957-65	150 BWPD @ 1100 psi
Aceco Petroleum High Lonesome Queen Sand Wf	High Lonesome (Queen) Sec. 16-T16S-R29E	400	152	21.7	211	1.39	40 Ac, 5-Spot	7P + 5I	1957-59	150 BWPD @ 1100 psi
Armstrong Energy High Lonesome Brewer Bosworth	High Lonesome (Queen) Secs. 11, 12, 13 & 14-T16S-R29E	1200	1361	45.4	1315	0.97	Peripheral Line Drive	14P + 16I	1963	280 BWPD @ 750 psi
Kincaid & Watson E. RedLake Ut.	Red Lake Queen Grayburg East Secs. 35 & 36-T16S-R28E Secs. 1 & 2-T17S-R28E	520	226	17.4	292	1.29	80 Ac, 5-Spot	6P + 7I	1970	280 BWPD @ 700 psi
			2268	37.2 Ave.	2143	0.94 Wtd. Ave. 1.07 Arith. Ave.				
Proposed W. High Lonesome Penrose Sand Unit	High Lonesome (Queen) Secs. 17, 18, 19 & 20-T16S-R29E	1080	538	22.4	538 Est.	1.0 Est.				

TABLE 5
Waterflood Development Cost
Proposed W. High Lonesome Penrose Sand Unit
High Lonesome Queen Field
Eddy County, New Mexico

	Item	Cost (M$)
I.	Drill & Equip one (1) Producing Well	125
II.	Convert 12 Wells to Injection	140
III.	Install Water Supply Line	72
IV.	Install Waterflood Plant and Facilities	85
V.	Install Water Injection Lines	140
VI.	Production Facility Consolidation	120
VII.	Re-Plug 2 Abandoned Wells in Proposed Unit Area	40
	Subtotal	722
	Pre Unitization Expense	65
	Total	787

TABLE 6

REMAINING PRIMARY & SECONDARY (PROVED)
PROPOSED W. HIGH LONESOME PENROSE SD UNIT
HIGH LONESOME QUEEN FIELD
EDDY COUNTY, NEW MEXICO

DATE: 01/20/93
TIME: 10:11.54
FILE: BEACH
GET#: 96

RESERVES AND ECONOMICS

BEACH EXPLORATION INC
CONSTANT OIL PRICE

AS OF JANUARY 1, 1993

T. SCOTT HICKMAN & ASSOC
PETROLEUM ENGINEERS

-END-	---GROSS PRODUCTION---		----NET PRODUCTION----		--PRICES---		--------OPERATIONS, M$--------					10.00 PCT
MO-YR	OIL, MBBL	GAS, MMCF	OIL, MBBL	GAS, MMCF	OIL $/B	GAS $/M	NET OPER REVENUES	SEV+ADV+ WF TAXES	NET OPER EXPENSES	CAPITAL COSTS, M$	CASH FLOW BTAX, M$	CUM. DISC BTAX, M$
12-93	19.204	.000	15.363	.000	18.00	.00	276.534	20.351	372.000	787.000	-902.817	-860.844
12-94	50.253	.000	40.202	.000	18.00	.00	723.636	53.255	372.000	.000	298.381	-602.114
12-95	104.649	.000	83.719	.000	18.00	.00	1506.942	110.901	372.000	.000	1024.041	205.121
12-96	101.699	.000	81.359	.000	18.00	.00	1464.462	107.775	372.000	.000	984.687	910.769
12-97	82.309	.000	65.847	.000	18.00	.00	1185.246	87.227	372.000	.000	726.019	1383.752
12-98	66.126	.000	52.901	.000	18.00	.00	952.218	70.077	372.000	.000	510.141	1685.883
12-99	53.125	.000	42.500	.000	18.00	.00	765.000	56.300	372.000	.000	336.700	1867.165
12- 0	42.680	.000	34.144	.000	18.00	.00	614.592	45.230	276.000	.000	293.362	2010.755
12- 1	34.289	.000	27.431	.000	18.00	.00	493.758	36.338	276.000	.000	181.420	2091.481
12- 2	27.547	.000	22.038	.000	18.00	.00	396.684	29.194	276.000	.000	91.490	2128.490
12- 3	16.635	.000	13.308	.000	18.00	.00	239.544	17.629	201.616	.000	20.299	2136.050
12- 4												
12- 5												
12- 6												
12- 7												
S TOT	598.516	.000	478.812	.000	18.00	.00	8618.616	634.277	3633.616	787.000	3563.723	2136.050
REM.	.000	.000	.000	.000	.00	.00	.000	.000	.000	.000	.000	2136.050
TOTAL	598.516	.000	478.812	.000	18.00	.00	8618.616	634.277	3633.616	787.000	3563.723	2136.050
CUM.	477.484	.000										
ULT.	1076.000	.000										

NET OIL REVENUES (M$)	8618.616		
NET GAS REVENUES (M$)	.000		
TOTAL REVENUES (M$)	8618.616		
BTAX RATE OF RETURN (PCT)	68.92	PROJECT LIFE (YEARS)	10.730
BTAX PAYOUT YEARS	2.59	DISCOUNT RATE (PCT)	10.000
BTAX PAYOUT YEARS (DISC)	2.75	GROSS OIL WELLS	25.000
BTAX NET INCOME/INVEST	5.53	GROSS GAS WELLS	.000
BTAX NET INCOME/INVEST (DISC)	3.85	GROSS WELLS	25.000
INITIAL W.I. FRACTION	1.000000	INITIAL NET OIL FRACTION	.800000
FINAL W.I. FRACTION	1.000000	FINAL NET OIL FRACTION	.800000
PRODUCTION START DATE	8- 1-92	INITIAL NET GAS FRACTION	.000000
MONTHS IN FIRST LINE	12.00	FINAL NET GAS FRACTION	.000000

--------PRESENT WORTH PROFILE--------

DISC RATE	PW OF NET BTAX, M$	DISC RATE	PW OF NET BTAX, M$
.0	3563.723	30.0	812.369
2.0	3205.295	35.0	631.304
5.0	2744.439	40.0	483.313
8.0	2358.823	45.0	361.140
10.0	2136.050	50.0	259.377
12.0	1936.505	60.0	101.703
15.0	1674.336	70.0	-12.369
18.0	1449.570	80.0	-96.718
20.0	1317.232	90.0	-160.188
25.0	1036.420	100.0	-208.623

TABLE 7

REMAINING PRIMARY-EXISTING OPERATIONS (PDP)
PROPOSED W. HIGH LONESOME PENROSE SD UNIT
HIGH LONESOME QUEEN FIELD
EDDY COUNTY, NEW MEXICO

DATE: 01/20/93
TIME: 10:11.54
FILE: BEACH
GET#: 95

RESERVES AND ECONOMICS

BEACH EXPLORATION INC
CONSTANT OIL PRICE

AS OF JANUARY 1, 1993

T. SCOTT HICKMAN & ASSOC
PETROLEUM ENGINEERS

-END-	---GROSS PRODUCTION---		----NET PRODUCTION----		--PRICES---		--------OPERATIONS, M$--------					10.00 PCT
MO-YR	OIL, MBBL	GAS, MMCF	OIL, MBBL	GAS, MMCF	OIL $/B	GAS $/M	NET OPER REVENUES	SEV+ADV+ WF TAXES	NET OPER EXPENSES	CAPITAL COSTS, M$	CASH FLOW BTAX, M$	CUM. DISC BTAX, M$
12-93	16.214	.000	12.971	.000	18.00	.00	233.478	17.182	156.600	.000	59.696	56.939
12-94	13.728	.000	10.982	.000	18.00	.00	197.676	14.548	120.000	.000	63.128	111.678
12-95	11.827	.000	9.462	.000	18.00	.00	170.316	12.534	120.000	.000	37.782	141.461
12-96	10.334	.000	8.267	.000	18.00	.00	148.806	10.951	120.000	.000	17.855	154.256
12-97	9.136	.000	7.309	.000	18.00	.00	131.562	9.683	120.000	.000	1.879	155.480
12-98												
12-99												
12- 0												
12- 1												
12- 2												
12- 3												
12- 4												
12- 5												
12- 6												
12- 7												
S TOT	61.239	.000	48.991	.000	18.00	.00	881.838	64.898	636.600	.000	180.340	155.480
REM.	.000	.000	.000	.000	.00	.00	.000	.000	.000	.000	.000	155.480
TOTAL	61.239	.000	48.991	.000	18.00	.00	881.838	64.898	636.600	.000	180.340	155.480
CUM.	477.484	.000										
ULT.	538.723	.000										

NET OIL REVENUES (M$)	881.838		
NET GAS REVENUES (M$)	.000		
TOTAL REVENUES (M$)	881.838		
PROJECT LIFE (YEARS)	5.000		
DISCOUNT RATE (PCT)	10.000		
GROSS OIL WELLS	24.000		
GROSS GAS WELLS	.000		
GROSS WELLS	24.000		
INITIAL NET OIL FRACTION	.800000		
FINAL NET OIL FRACTION	.800000		
INITIAL NET GAS FRACTION	.000000		
FINAL NET GAS FRACTION	.000000		

BTAX RATE OF RETURN (PCT)	100.00				
BTAX PAYOUT YEARS	.00				
BTAX PAYOUT YEARS (DISC)	.00				
BTAX NET INCOME/INVEST	.00				
BTAX NET INCOME/INVEST (DISC)	.00				
INITIAL W.I. FRACTION	1.000000				
FINAL W.I. FRACTION	1.000000				
PRODUCTION START DATE	8- 1-92				
MONTHS IN FIRST LINE	12.00				

--------PRESENT WORTH PROFILE--------

DISC RATE	PW OF NET BTAX, M$	DISC RATE	PW OF NET BTAX, M$
.0	180.340	30.0	122.610
2.0	174.727	35.0	116.635
5.0	166.952	40.0	111.289
8.0	159.864	45.0	106.480
10.0	155.480	50.0	102.133
12.0	151.346	60.0	94.591
15.0	145.564	70.0	88.280
18.0	140.238	80.0	82.923
20.0	136.919	90.0	78.326
25.0	129.326	100.0	74.339

TABLE 8

SECONDARY (PUD)
PROPOSED W. HIGH LONESOME PENROSE SD UNIT
HIGH LONESOME QUEEN FIELD
EDDY COUNTY, NEW MEXICO

DATE: 01/20/93
TIME: 10:11.54
FILE: BEACH
GET#: 0

RESERVES AND ECONOMICS

BEACH EXPLORATION INC
CONSTANT OIL PRICE

AS OF JANUARY 1, 1993

T. SCOTT HICKMAN & ASSOC
PETROLEUM ENGINEERS

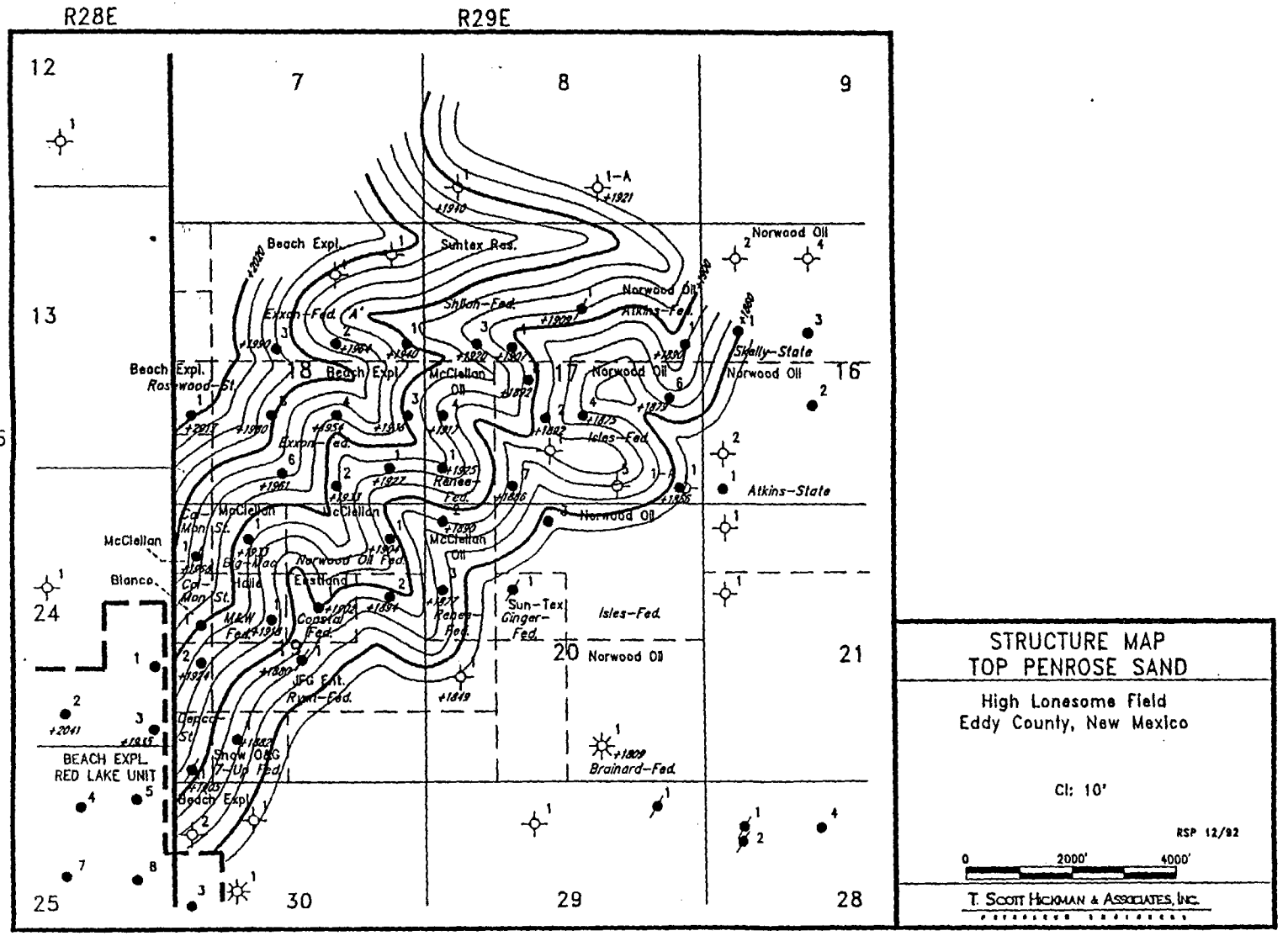
-END-	---GROSS PRODUCTION---		----NET PRODUCTION----		--PRICES---		--------OPERATIONS, M$--------					10.00 PCT
MO-YR	OIL, MBBL	GAS, MMCF	OIL, MBBL	GAS, MMCF	OIL $/B	GAS $/M	NET OPER REVENUES	SEV+ADV+ WF TAXES	NET OPER EXPENSES	CAPITAL COSTS, M$	CASH FLOW BTAX, M$	CUM. DISC BTAX, M$
12-93	2.990	.000	2.392	.000	18.00	.00	43.056	3.169	215.400	787.000	-962.513	-917.783
12-94	36.525	.000	29.220	.000	18.00	.00	525.960	38.707	252.000	.000	235.253	-713.792
12-95	92.822	.000	74.257	.000	18.00	.00	1336.626	98.367	252.000	.000	986.259	63.660
12-96	91.365	.000	73.092	.000	18.00	.00	1315.656	96.824	252.000	.000	966.832	756.513
12-97	73.173	.000	58.538	.000	18.00	.00	1053.684	77.544	252.000	.000	724.140	1228.272
12-98	66.126	.000	52.901	.000	18.00	.00	952.218	70.077	372.000	.000	510.141	1530.403
12-99	53.125	.000	42.500	.000	18.00	.00	765.000	56.300	372.000	.000	336.700	1711.685
12- 0	42.680	.000	34.144	.000	18.00	.00	614.592	45.230	276.000	.000	293.362	1855.275
12- 1	34.289	.000	27.431	.000	18.00	.00	493.758	36.338	276.000	.000	181.420	1936.001
12- 2	27.547	.000	22.038	.000	18.00	.00	396.684	29.194	276.000	.000	91.490	1973.010
12- 3	16.635	.000	13.308	.000	18.00	.00	239.544	17.629	201.616	.000	20.299	1980.570
12- 4												
12- 5												
12- 6												
12- 7												
S TOT	537.277	.000	429.821	.000	18.00	.00	7736.778	569.379	2997.016	787.000	3383.383	1980.570
REM.	.000	.000	.000	.000	.00	.00	.000	.000	.000	.000	.000	1980.570
TOTAL	537.277	.000	429.821	.000	18.00	.00	7736.778	569.379	2997.016	787.000	3383.383	1980.570
CUM.	.000	.000										
ULT.	537.277	.000										

NET OIL REVENUES (M$)	7736.778		
NET GAS REVENUES (M$)	.000		
TOTAL REVENUES (M$)	7736.778		
PROJECT LIFE (YEARS)	10.730		
DISCOUNT RATE (PCT)	10.000		
GROSS OIL WELLS	25.000		
GROSS GAS WELLS	.000		
GROSS WELLS	25.000		

BTAX RATE OF RETURN (PCT)	60.66
BTAX PAYOUT YEARS	2.74
BTAX PAYOUT YEARS (DISC)	2.92
BTAX NET INCOME/INVEST	5.30
BTAX NET INCOME/INVEST (DISC)	3.64

--------PRESENT WORTH PROFILE---------

DISC RATE	PW OF NET BTAX, M$	DISC RATE	PW OF NET BTAX, M$
.0	3383.383	30.0	689.759
2.0	3030.568	35.0	514.669
5.0	2577.487	40.0	372.024
8.0	2198.959	45.0	254.660
10.0	1980.570	50.0	157.244
12.0	1785.159	60.0	7.112
15.0	1528.772	70.0	-100.649
18.0	1309.332	80.0	-179.641
20.0	1180.313	90.0	-238.514
25.0	907.094	100.0	-282.962


R28E
R29E
T 16 S
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18
17
T6
24
19
20
21
25
30
29
28
Beach Expl.
Rosewood-St.
Beach Expl.
Suntex Res.
Exxon-Fed. A
Shiloh-Fed.
Norwood Oil
Atkins-Fed.
Skelly-State
McClellan Oil
Exxon-Fed.
Ranee-Fed.
Isles-Fed.
Atkins-State
Co-Mon St.
McClellan
Blanco
Norwood Oil Fed.
Eastland
Sun-Tex Ginger-Fed.
Isles-Fed.
M&W Fed.
Coastal Fed.
Rebeo-Fed.
JFG Ent. Ryan-Fed.
Geneca-St.
Show/OBG 7-Up Fed.
Brainard-Fed.
BEACH EXPL. RED LAKE UNIT
STRUCTURE MAP
TOP PENROSE SAND
High Lonesome Field
Eddy County, New Mexico
CI: 10'
RSP 12/92
0
2000'
4000'
T. Scott Hickman & Associates, Inc.

FIGURE 1

PROPOSED W. HIGH LONESOME PENROSE SD UNIT
HIGH LONESOME QUEEN FIELD
EDDY COUNTY, NEW MEXICO

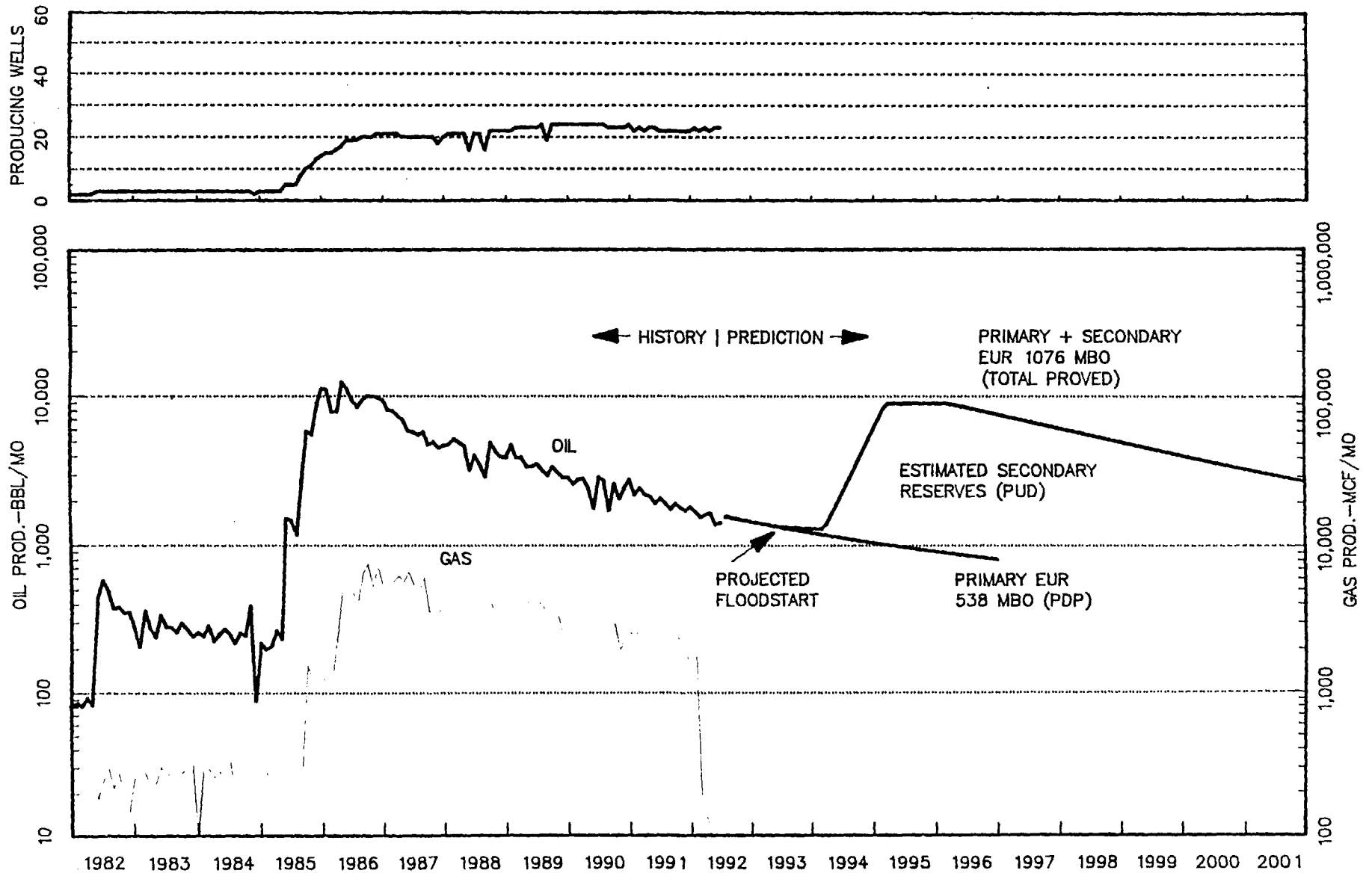
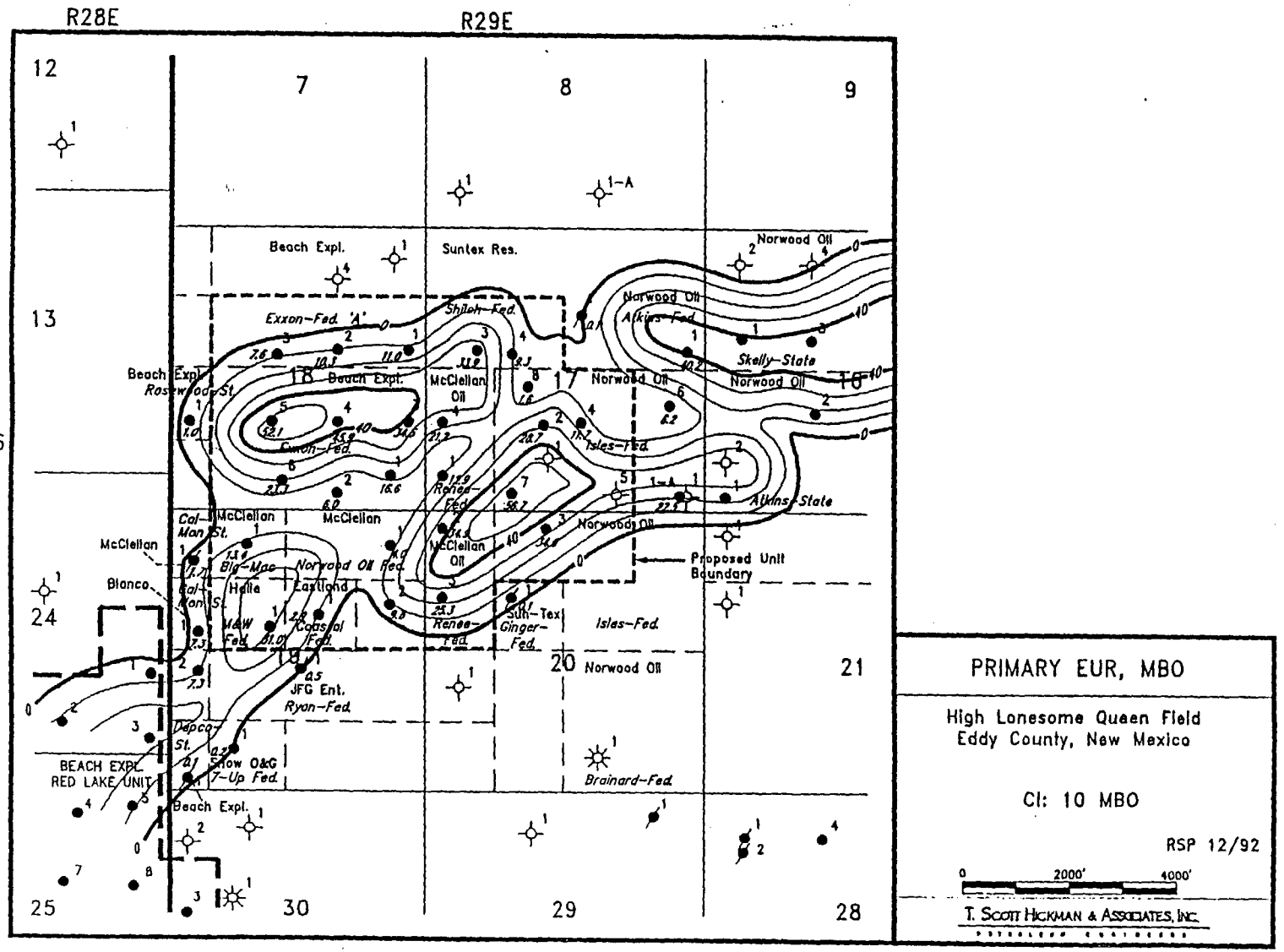


FIGURE 4



PRIMARY EUR, MBO

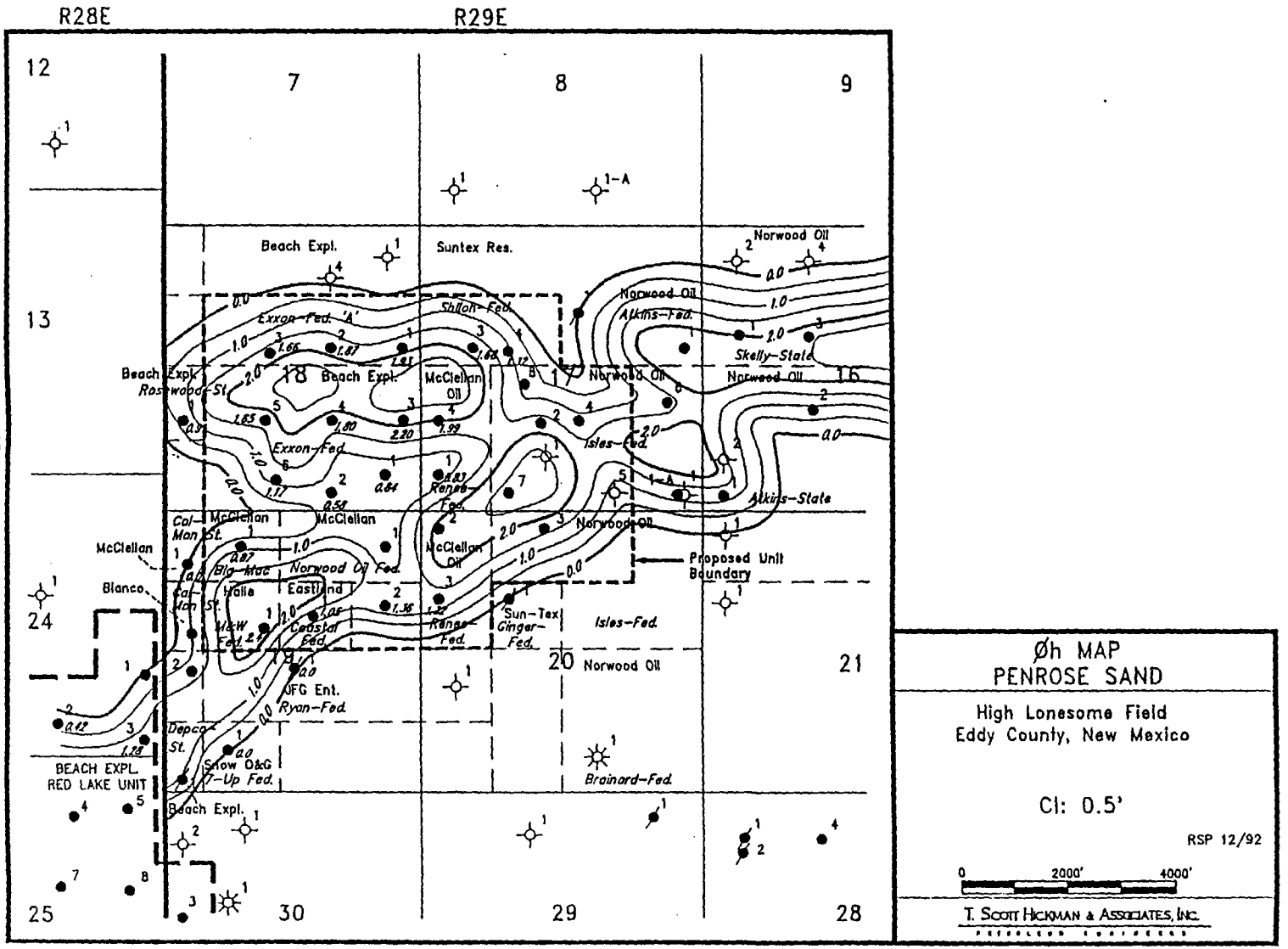
High Lonesome Queen Field
Eddy County, New Mexico

CI: 10 MBO

RSP 12/92

0 2000' 4000'

T. Scott Hickman & Associates, Inc.



Øh MAP
PENROSE SAND

High Lonesome Field
Eddy County, New Mexico

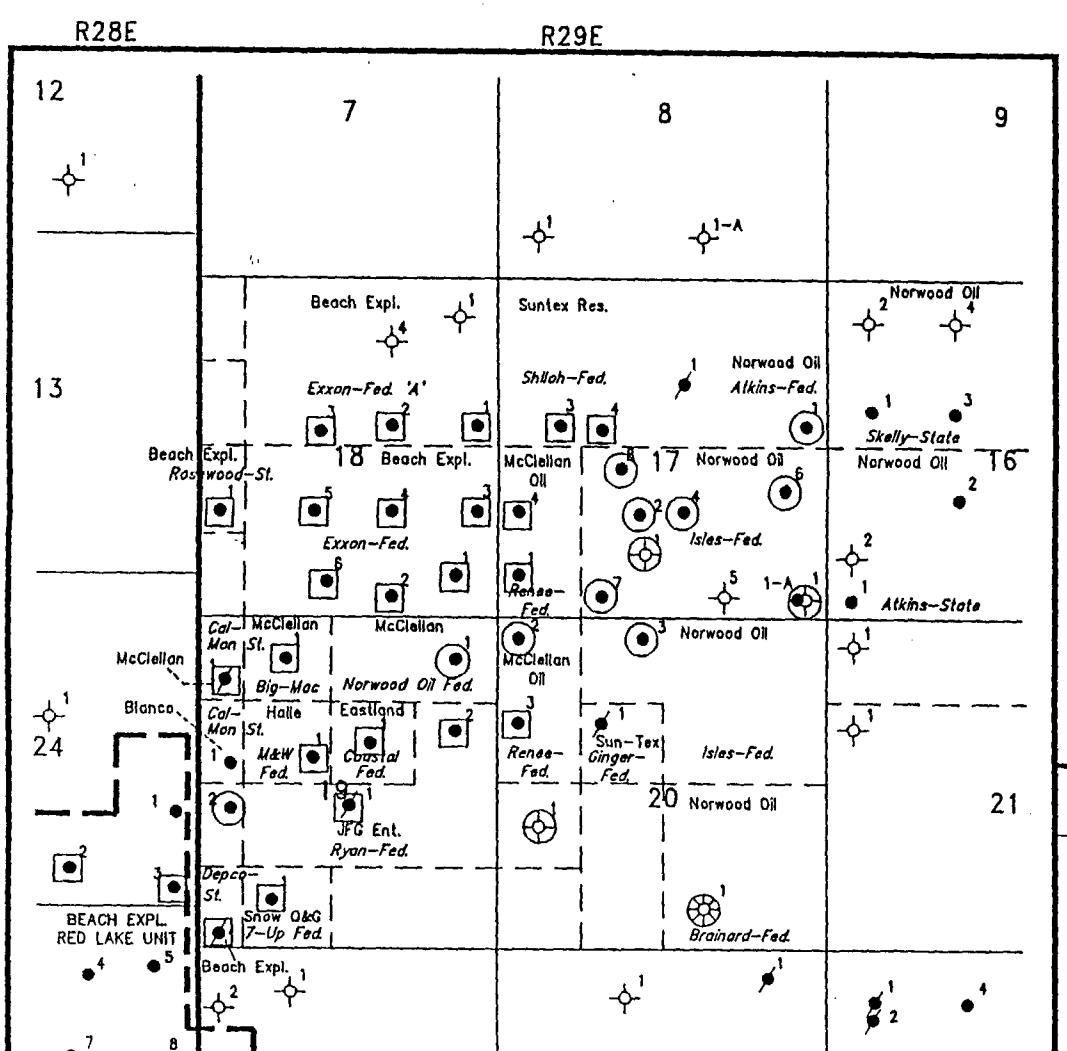
CI: 0.5'

RSP 12/92

0 2000' 4000'

T. Scott Hickman & Associates, Inc.

FIGURE 6



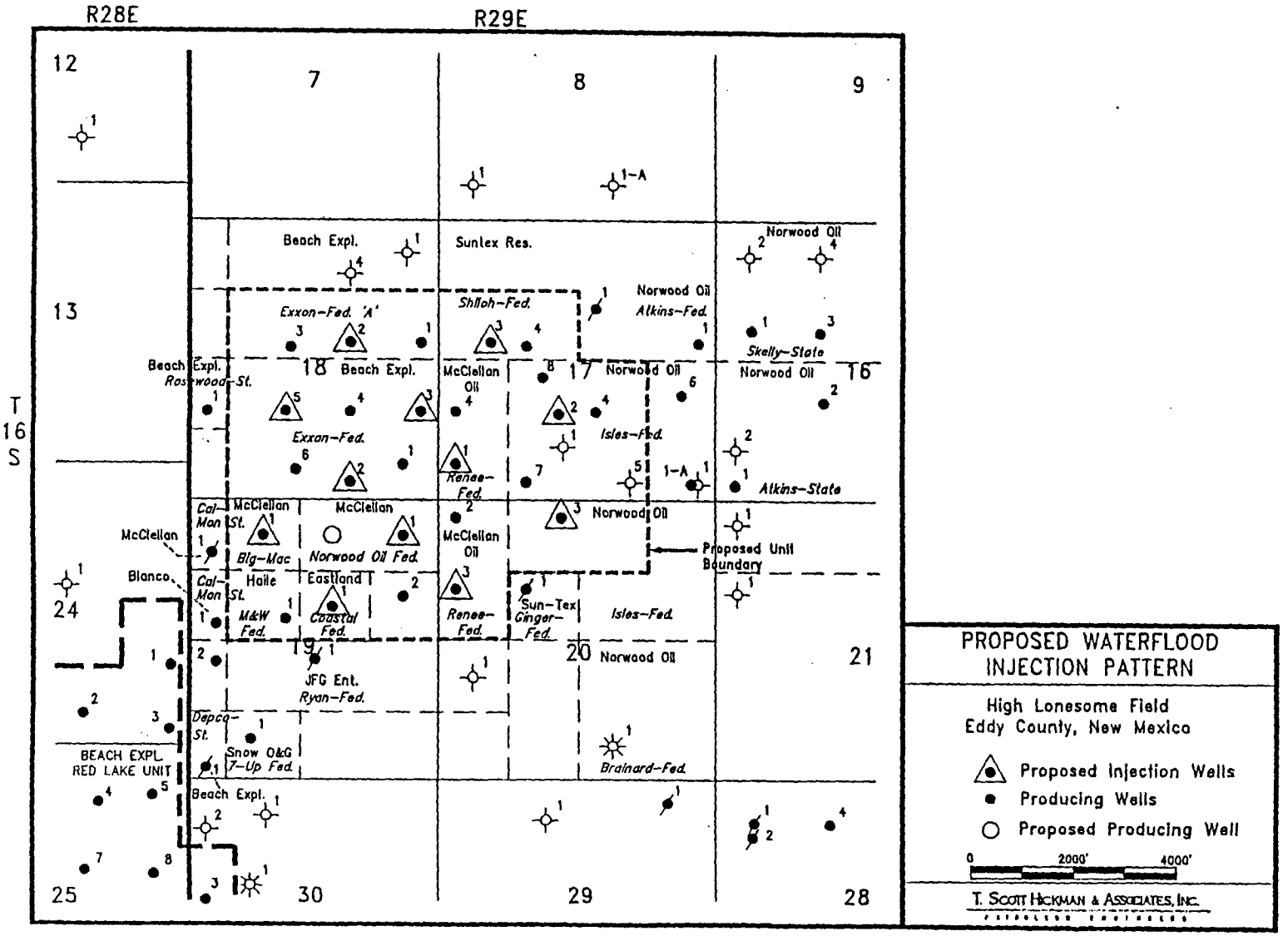
POROSITY LOGS
PENROSE SAND

High Lonesome Field
Eddy County, New Mexico

□ Density/Neutron
○ Neutron

0 2000' 4000'

T. Scott Hickman & Associates, Inc.
Petroleum Engineers


R28E
R29E
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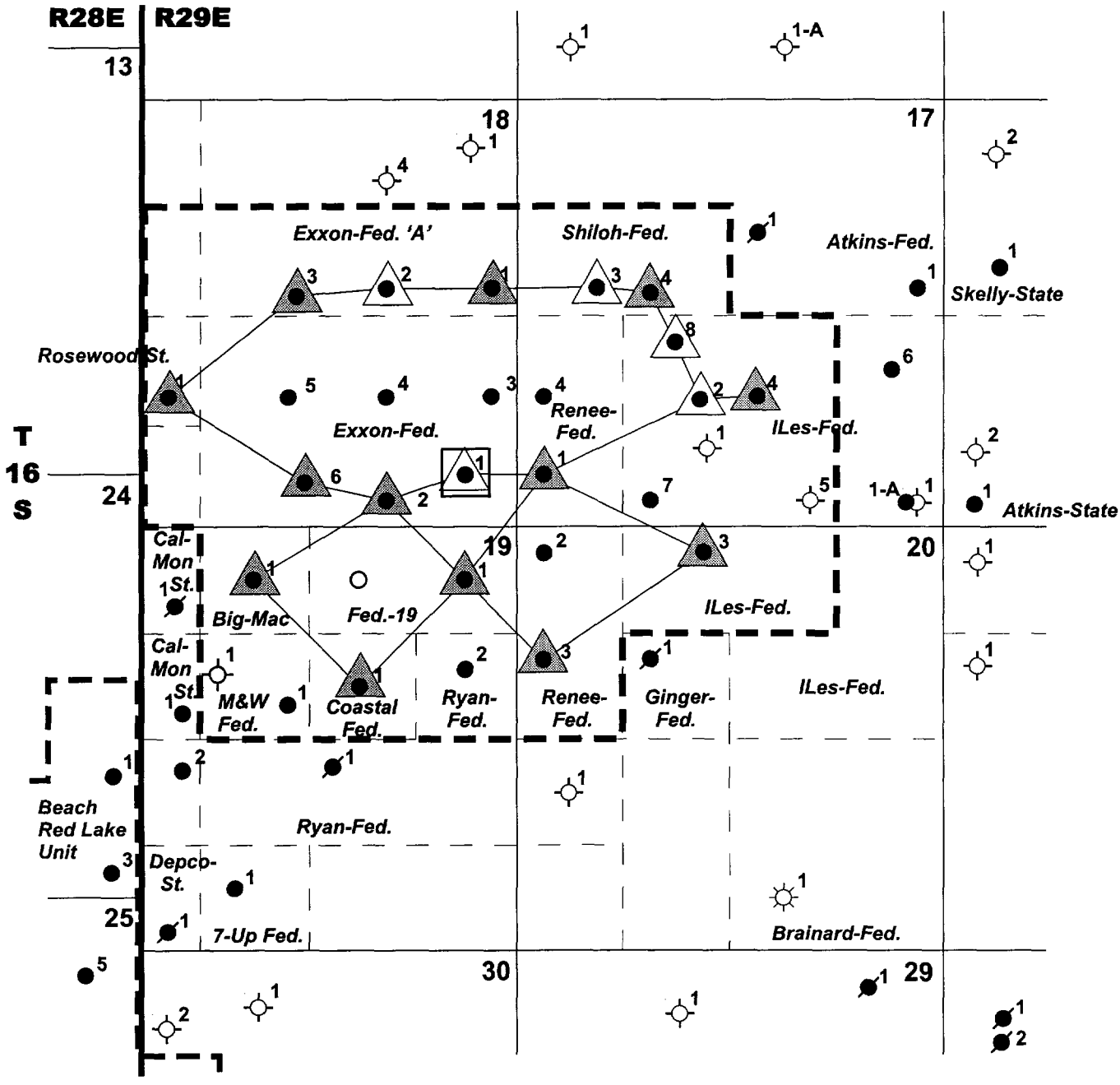
28
Beach Expl.
Suntex Res.
Norwood Oil
Exxon-Fed. 'A'
Shiloh-Fed.
Norwood Oil
Atkins-Fed.
Skelly-State
Beach Expl.
Rosewood-St.
Beach Expl.
McClellan Oil
Norwood Oil
Norwood Oil
Exxon-Fed.
Isles-Fed.
Renee-Fed.
1-A
Atkins-State
Cal-Man
McClellan St.
McClellan
McClellan Oil
Norwood Oil
McClellan
Big-Mac
Norwood Oil Fed.
Proposed Unit Boundary
Blanco
Cal-Man St.
Haile
Eastland
M&W Fed.
Coastal Fed.
Renee-Fed.
Sun-Tex Ginger-Fed.
Isles-Fed.
Norwood Oil
JFG Ent.
Ryan-Fed.
Depco-St.
Snow O&G 7-Up Fed.
Brainard-Fed.
BEACH EXPL. RED LAKE UNIT
Beach Expl.
PROPOSED WATERFLOOD INJECTION PATTERN
High Lonesome Field
Eddy County, New Mexico
Proposed Injection Wells
Producing Wells
Proposed Producing Well
0
2000'
4000'
T. Scott Hickman & Associates, Inc.
Petroleum Engineers

FIGURE 8



N

Injector Phase I

Injector Phase II

Drill Producer

Central Battery

Beach Exploration, Inc.

WEST HIGH LONESOME PENROSE SAND UNIT

Form C108 Item VII.

DEVELOPMENT PLAT

0 1000 2000

Eddy County, New Mexico Scale : 1"=2000'

JMR March 2001

InterChem, Inc
3803 Mankins P. O. Box 13166 Odessa, Tx. 79768

Membrane Filter Evaluation

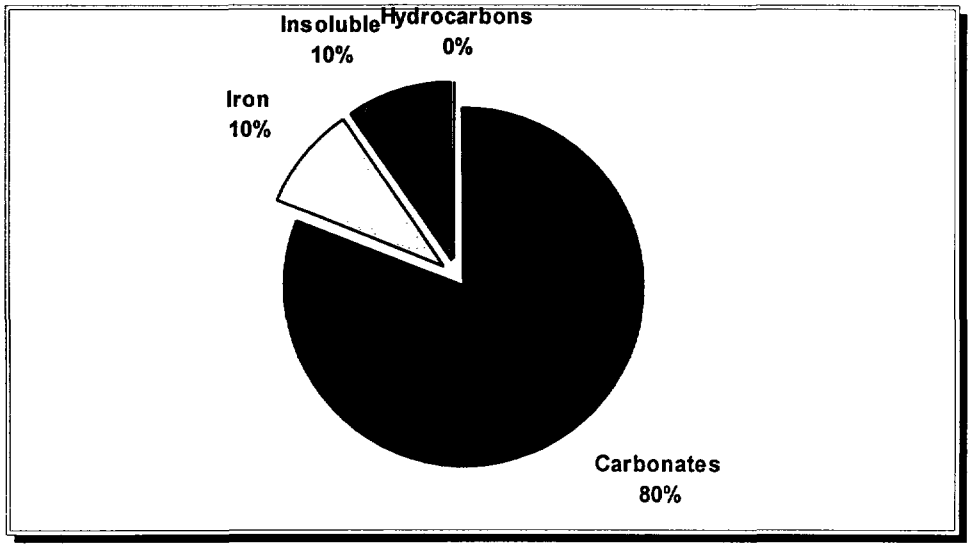
Monday, June 04, 2001

Pro Kem, Inc.

Oil Company	Beach Exploration
Lease:	Double Eagle
Sample ID:	Fresh Water
Location:	

Test Date:	5/25/2001
Filter Size:	0.45 micron membrane filter
Volume/Time:	900 ccs in 4 minutes.

	mg/L.	Percent of Total
Hydrocarbons Oil, Paraffin, Asphaltenes, etc.	0.00	0.00%
Carbonates Calcium Carbonate, etc.	7.56	80.95%
Iron Iron Oxide, Iron Sulfide, etc..	0.89	9.52%
Acid Insolubles Sand, Silt, Clay, Calcium Sulfate, etc.	0.89	9.52%
Total Suspended Solids	9.33	



Microscopic examination of the residues after leaching with 15% HCl revealed the presence of the following:
Small amounts of undissolved Iron Oxide, along with some sand.

Pro-Kem, Inc.

WATER ANALYSIS REPORT

SAMPLE

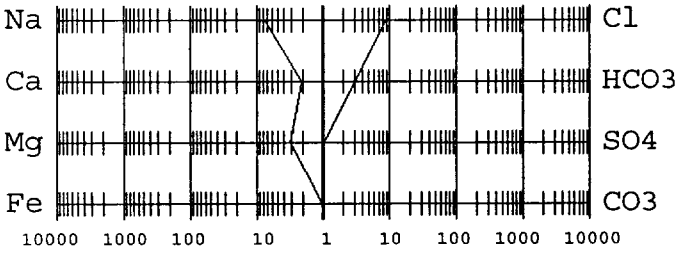
Oil Co. : **Beach Exploration**
Lease : **Double Eagle**
Well No.: **Fresh Water**
Lab No. : **F:\ANALYSES\jun0501.001**

Sample Loc. :
Date Analyzed: **5-June-2001**
Date Sampled : **2-June-2001**

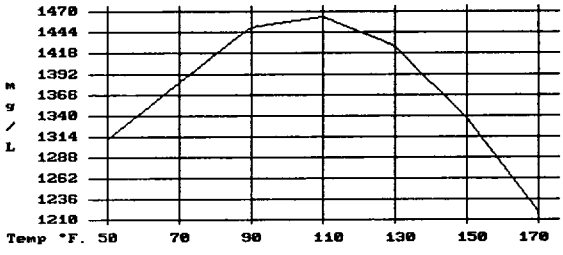
ANALYSIS

1.	pH			**7.850**	
2.	Specific Gravity 60/60 F.			**1.004**	
3.	$CaCO_3$ Saturation Index	@ 80 F.		**+0.631**	
		@ 140 F.		**+1.231**	
	Dissolved Gasses			**MG/L**	**EQ. WT.** ***MEQ/L**
4.	Hydrogen Sulfide			0	
5.	Carbon Dioxide			5	
6.	Dissolved Oxygen			6.0	
	Cations				
7.	Calcium	(Ca^{++})		39	/ 20.1 = **1.94**
8.	Magnesium	(Mg^{++})		36	/ 12.2 = **2.95**
9.	Sodium	(Na^{+})	(Calculated)	168	/ 23.0 = **7.30**
10.	Barium	(Ba^{++})		**Not Determined**	
	Anions				
11.	Hydroxyl	(OH^{-})		0	/ 17.0 = **0.00**
12.	Carbonate	($CO_3^{=}$)		0	/ 30.0 = **0.00**
13.	Bicarbonate	(HCO_3^{-})		176	/ 61.1 = **2.88**
14.	Sulfate	($SO_4^{=}$)		42	/ 48.8 = **0.86**
15.	Chloride	(Cl^{-})		300	/ 35.5 = **8.45**
16.	Total Dissolved Solids			761	
17.	Total Iron (Fe)			2	/ 18.2 = **0.11**
18.	Total Hardness As $CaCO_3$			245	
19.	Resistivity @ 75 F. (Calculated)			**2.810** /cm.	

LOGARITHMIC WATER PATTERN
***meq/L.**



Calcium Sulfate Solubility Profile



PROBABLE MINERAL COMPOSITION

COMPOUND	EQ. WT.	X *meq/L	= mg/L.
$Ca(HCO_3)_2$	81.04	1.94	157
$CaSO_4$	68.07	0.00	0
$CaCl_2$	55.50	0.00	0
$Mg(HCO_3)_2$	73.17	0.94	69
$MgSO_4$	60.19	0.86	52
$MgCL_2$	47.62	1.15	55
$NaHCO_3$	84.00	0.00	0
$NaSO_4$	71.03	0.00	0
NaCl	58.46	7.30	427

***Milli Equivalents per Liter**

This water is mildly corrosive due to the pH observed on analysis.
The corrosivity is increased by the content of mineral salts, and the presence of, CO2, Oxygen in solution.

InterChem, Inc.
(915) 550-7027 P. O. Box 13166 Odessa, Tx. 79768

Water Quality Survey 20-April-2001

Pro-Kem, Inc.
Beach Exploration - Big George SWD

Attached please find the printouts reflecting the results obtained from the survey conducted at the above water handling facilities on April 20, 2001. Following, for your perusal, is a detailed explanation of our findings, on a point-by-point basis.

Sample Locations

Listed below are the locations sampled for the purposes of this survey.

» Second Water Holding Tank

Water Analyses

Results indicate that the water handled by this system is moderately corrosive due to the content of dissolved mineral salts, reporting a TDS of 211,045 mg/L., in combination with the presence of H_2S and CO_2 in solution. In addition, the presence of small amounts of Oxygen will exacerbate the corrosion process on the tubular goods exposed to this water by the process of cathodic depolarization.

The Stiff and Davis Saturation Index predicts that this water should exhibit a moderate to severe Calcium Carbonate deposition tendency at 80° F., increasing in magnitude to a severe level at 140° F. A mild to moderate Calcium Sulfate scaling potential is expected from this water.

Dissolved Gasses

Listed below are the results obtained from the tests carried out on-site at the time of sampling. Results indicate minor amounts of CO_2 and H_2S in the produced water; however, we detected Oxygen in solution. Please review the following table.

Location	ppm. O_2	ppm. CO_2	ppm. H_2S
Water Holding Tank	0.5	130	40

Suspended Solids Test

Results of the 0.45 micron membrane filter tests carried out on-site at the time of sampling indicate that about 65% of the total suspended solids present in the injection water is composed of carbonates. The next highest figure is due to the hydrocarbons, which account for 19% of this water's suspended solids. The total

amount of suspended solids present is considered to be high, since it falls above the accepted lower limit of 50 mg/L. After leaching with 15% HCl, examination of the residues revealed small amounts of undissolved iron sulfide, along with what appears to be Calcium Sulfate. Please review the following table and graph outlining our results.

Location	mg/L. Organic	mg/L. Carbonates	mg/L. Iron	mg/L. Insolubles	mg/L. Total
Water Tank	37.00	129.50	29.00	2.50	198.00

Suspended Oil Content

The TriChloroEthane extraction carried out on the sample collected during this survey indicate that there were 2,518 ppm. of oil in suspension in the injection water at the time of collection.

Bacteria Counts

The results obtained from the bacteria culture bottles inoculated on-site at the time of sampling indicate moderate amounts of Sulfate-Reducing bacteria. Please review the following table.

Location	Col./ml. Aerobic	Col./ml. SRB
Water Tank	Negative	10,000<X<100,000

Observations and Recommendations

Based on the above observations, we feel that the system is operating above acceptable limits. The dissolved oxygen in these waters should be minimized by replacing the thief hatch seals if necessary and installing a gas blanket with at least 2oz. of pressure on all water holding tanks. As you know, the presence of this gas in solution acts to further precipitate any solids still in solution, such as iron sulfide, as well as to increase the corrosive attack by hydrogen sulfide on any metal surfaces exposed to the injection water, by the mechanism of cathodic depolarization.

At the time of sampling, the bacteria tests indicate moderate amounts of sulfate-reducing bacteria present in suspension, such that we recommend that the producing wells be tested to determine those which may be candidates for cleaning and treatment with a bactericide.

Should there be an observed production drop in some of the producing wells, it may be that there is scale deposition downhole. Based on the results of the water analyses, as well as of the membrane filters, the majority of this scale should be Calcium Carbonate, with perhaps small amounts of Calcium Sulfate. Therefore, those producing wells which may have experienced a production drop may be acidized with 5% by volume of blend No. 1 to assist the acid in penetrating any hydrocarbon deposits downhole. These wells should also be considered candidates for squeezing with a scale inhibitor to extend the producing life of the well.

If we may further assist you in the interpretation of the above observations, please call at your convenience.

José Luis Enriquez
Technical Services

Blend No. 1 Micellar Solvent for Acidizing

Product	Gals/55
INC 901	55

Pro-Kem, Inc.
WATER ANALYSIS REPORT

SAMPLE

Oil Co. : **Beach Exploration**
Lease : **Mack Energy**
Well No.: **Big George SWD**
Location: **Water Holding Tank**
Attention:

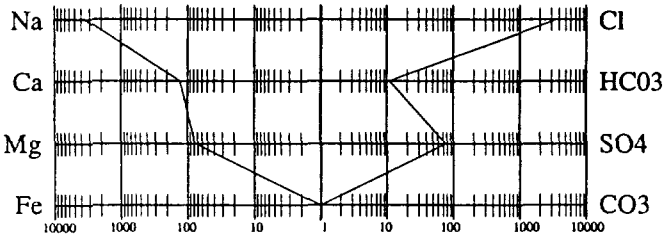
Date Sampled : **20-April-2001**
Date Analyzed: **20-April-2001**
Lab ID Number: **May1401.001- 1**
Salesperson :

File Name : **c:\Waters\May1401.001**

ANALYSIS

1.	Ph			**6.750**		
2.	Specific Gravity 60/60 F.			**1.148**		
3.	CACO3 Saturation Index		@ 80F	**0.876**		
			@140F	**2.046**		
	Dissolved Gasses			**MG/L.**	**EQ. WT.**	***MEQ/L**
4.	Hydrogen Sulfide			**40**		
5.	Carbon Dioxide			**130**		
6.	Dissolved Oxygen			**0.5**		
	Cations					
7.	Calcium	(Ca++)		**2,467**	/ 20.1 =	**122.74**
8.	Magnesium	(Mg++)		**898**	/ 12.2 =	**73.61**
9.	Sodium	(Na+)	(Calculated)	**78,473**	/ 23.0 =	**3,411.87**
10.	Barium	(Ba++)		**Not Determined**		
	Anions					
11.	Hydroxyl	(OH+)		**0**	/ 17.0 =	**0.00**
12.	Carbonate	(CO3=)		**0**	/ 30.0 =	**0.00**
13.	Bicarbonate	(HCO3-)		**635**	/ 61.1 =	**10.39**
14.	Sulfate	(SO4=)		**3,600**	/ 48.8 =	**73.77**
15.	Chloride	(Cl-)		**124,972**	/ 35.5 =	**3,520.34**
16.	Total Dissolved Solids			**211,045**		
17.	Total Iron	(Fe)		**4**	/ 18.2 =	**0.22**
18.	Total Hardness as CaCO3			**9,857**		
19.	Resistivity @ 75 F. (Calculated)			**0.001** /cm.		

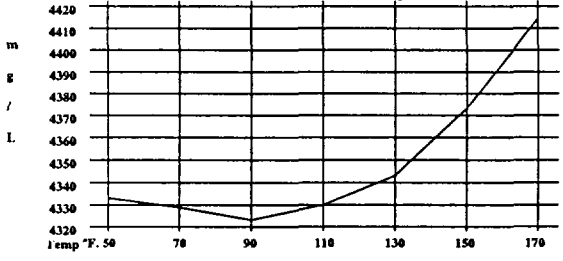
LOGARITHMIC WATER PATTERN
***meq / L.**



PROBABLE MINERAL COMPOSITION

COMPOUND	EQ. WT.	X *meq/L =	mg/L.
Ca(HCO3)2	**81.04**	10.39	842
CaSO4	**68.07**	73.77	5,022
CaCl2	**55.50**	38.57	2,141
Mg(HCO3)2	**73.17**	0.00	0
MgSO4	**60.19**	0.00	0
MgCl2	**47.62**	73.61	3,505
NaHCO3	**84.00**	0.00	0
NaSO4	**71.03**	0.00	0
NaCl	**58.46**	3,408.16	199,241

Calcium Sulfate Solubility Profile



InterChem, Inc
3803 Mankins P. O. Box 13166 Odessa, Tx. 79768

Suspended Oil Tests Monday, May 14, 2001

Pro-Kem, Inc.

Oil Company: Beach Exploration

Sample ID	Location	Date Collected	ppm Suspended Oil
Lease: Mack Energy			
Big George SWD	Water Holding Tank	20-Apr-01	2518

José Luis Enriquez
Tech Services

InterChem, Inc
3803 Mankins P. O. Box 13166 Odessa, Tx. 79768

Membrane Filter Evaluation

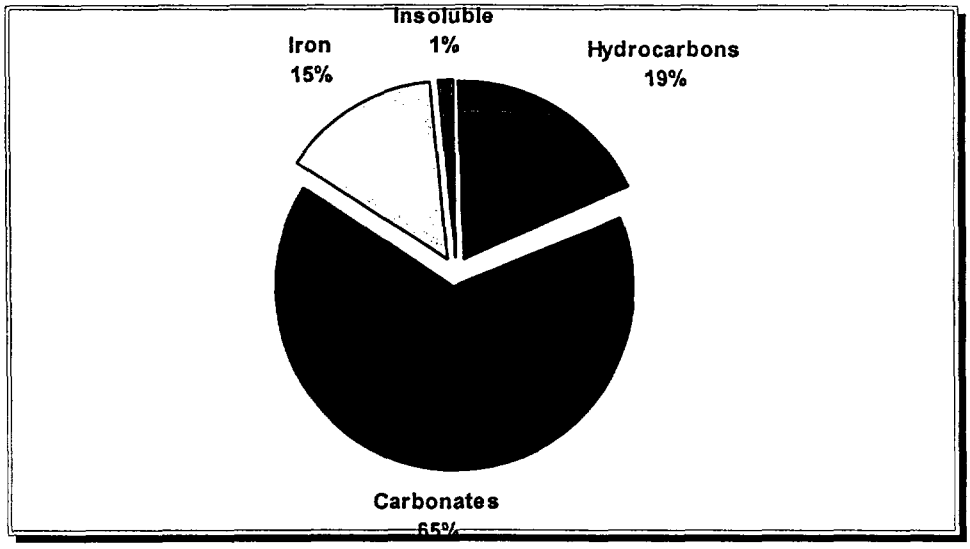
Monday, May 14, 2001

Pro Kem, Inc.

Oil Company	Beach Exploration
Lease:	Mack Energy
Sample ID:	Big George SWD
Location:	Water Holding Tank

Test Date:	4/20/2001
Filter Size:	0.45 micron membrane filter
Volume/Time:	200 ccs in 5 minutes.

	mg/L.	Percent of Total
Hydrocarbons ..... Oil, Paraffin, Asphaltenes, etc.	37.00	18.69%
Carbonates ..... Calcium Carbonate, etc.	129.50	65.40%
Iron ..... Iron Oxide, Iron Sulfide, etc..	29.00	14.65%
Acid Insolubles ..... Sand, Silt, Clay, Calcium Sulfate, etc.	2.50	1.26%
Total Suspended Solids	198.00	



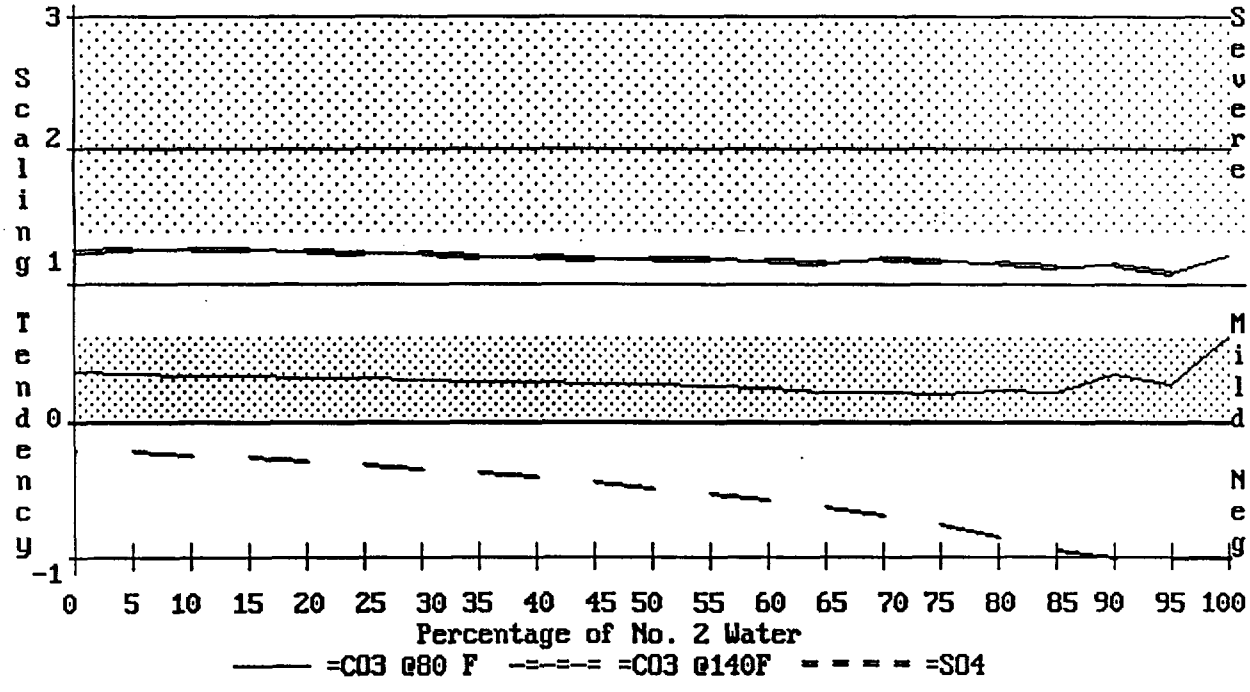
Microscopic examination of the residues after leaching with 15% HCl revealed the presence of the following:
Small amounts of undissolved Iron Sulfide, along with
what appears to be Calcium Sulfate.

Comparison Between Two Waters

Pro-Kem, Inc.

Sample # 1	Sample # 2
Beach Exploration	Beach Exploration
Exxon Federal	Double Eagle Fresh Water
11-December-2000	11-December-2000

Percent of #1 & #2	pH	TDS mg/L	SpGr	Saturation Index @80°F.	Saturation Index @140°F.	Calcium Sulfate Scaling Potential
100 - 0	6.530	125966	1.093	+0.357	+1.247	Nil
95 - 5	6.590	119706	1.089	+0.346	+1.251	Nil
90 - 10	6.649	113446	1.084	+0.333	+1.258	Nil
85 - 15	6.709	107186	1.080	+0.328	+1.263	Nil
80 - 20	6.768	100926	1.075	+0.320	+1.240	Nil
75 - 25	6.828	94,666	1.071	+0.310	+1.230	Nil
70 - 30	6.887	88,406	1.066	+0.296	+1.226	Nil
65 - 35	6.947	82,146	1.062	+0.282	+1.200	Nil
60 - 40	7.006	75,886	1.057	+0.279	+1.199	Nil
55 - 45	7.066	69,626	1.053	+0.274	+1.184	Nil
50 - 50	7.125	63,367	1.048	+0.273	+1.183	Nil
45 - 55	7.185	57,107	1.044	+0.261	+1.186	Nil
40 - 60	7.244	50,847	1.039	+0.241	+1.171	Nil
35 - 65	7.304	44,587	1.035	+0.217	+1.157	Nil
30 - 70	7.363	38,327	1.030	+0.212	+1.182	Nil
25 - 75	7.423	32,067	1.026	+0.201	+1.171	Nil
20 - 80	7.482	25,807	1.021	+0.230	+1.160	Nil
15 - 85	7.542	19,547	1.017	+0.218	+1.128	Nil
10 - 90	7.601	13,287	1.012	+0.348	+1.138	Nil
5 - 95	7.661	7,027	1.008	+0.273	+1.083	Nil
0 - 100	7.720	767	1.003	+0.614	+1.214	Nil

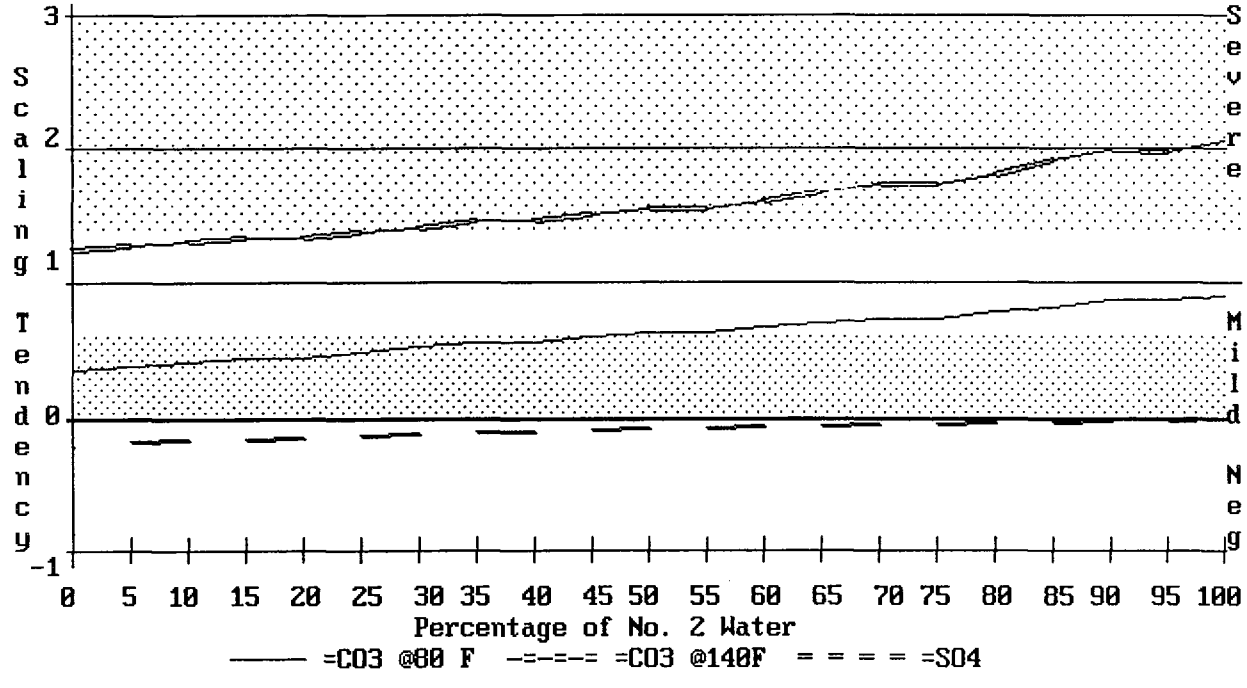


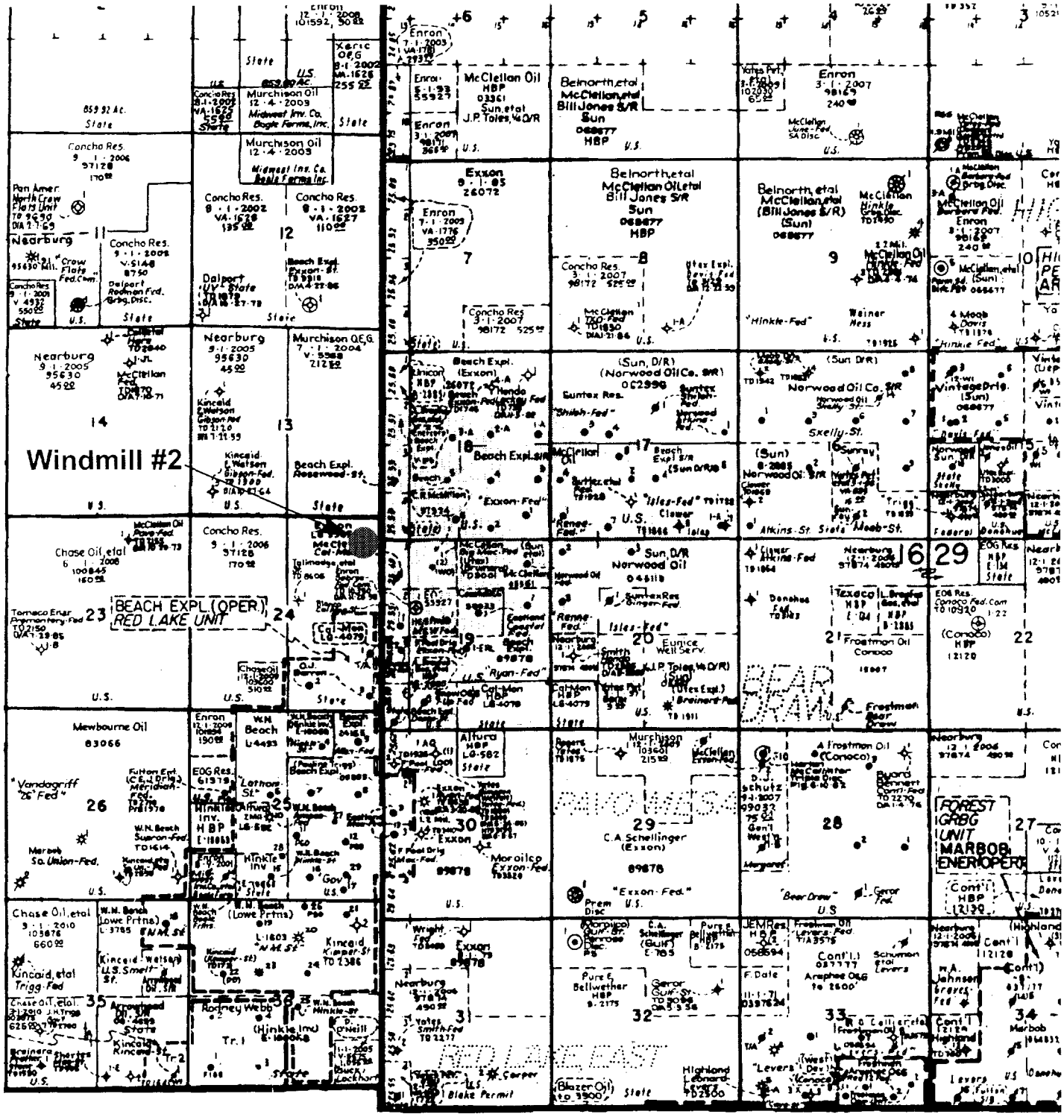
Comparison Between Two Waters

Pro-Kem, Inc.

Sample # 1	Sample # 2
Beach Exploration	Mack Energy
Exxon Federal Tank Battery	Big George SWD
18-May-2001	18-May-2001

Percent of #1 & #2	pH	TDS mg/L	SpGr	Saturation Index @80°F.	Saturation Index @140°F.	Calcium Sulfate Scaling Potential
100 - 0	6.530	125966	1.093	+0.357	+1.247	Nil
95 - 5	6.541	130225	1.096	+0.389	+1.269	Nil
90 - 10	6.552	134484	1.099	+0.411	+1.301	Nil
85 - 15	6.563	138743	1.101	+0.443	+1.333	Nil
80 - 20	6.574	143002	1.104	+0.444	+1.334	Nil
75 - 25	6.585	147261	1.107	+0.486	+1.366	Nil
70 - 30	6.596	151520	1.110	+0.527	+1.407	Nil
65 - 35	6.607	155779	1.112	+0.558	+1.458	Nil
60 - 40	6.618	160038	1.115	+0.558	+1.458	Nil
55 - 45	6.629	164297	1.118	+0.598	+1.498	Nil
50 - 50	6.640	168556	1.121	+0.628	+1.548	Nil
45 - 55	6.651	172814	1.123	+0.628	+1.548	Nil
40 - 60	6.662	177073	1.126	+0.667	+1.607	Nil
35 - 65	6.673	181332	1.129	+0.705	+1.665	Nil
30 - 70	6.684	185591	1.132	+0.734	+1.724	Nil
25 - 75	6.695	189850	1.134	+0.732	+1.722	Nil
20 - 80	6.706	194109	1.137	+0.779	+1.799	Nil
15 - 85	6.717	198368	1.140	+0.816	+1.916	Nil
10 - 90	6.728	202627	1.143	+0.872	+1.982	Nil
5 - 95	6.739	206886	1.145	+0.868	+1.978	Nil
0 - 100	6.750	211145	1.148	+0.893	+2.063	Nil




Windmill #2
BEACH EXPL (OPER.)
RED LAKE UNIT
RED LAKE EAST
PAD
Beach Exploration, Inc.
WEST HIGH LONESOME
PENROSE SAND UNIT
Form C-108 Item XI.
Fresh Water Wells
Within 1 Mile of Injectors
0 2000 4000
Eddy County, New Mexico
Scale : 1"=4000'
JMR
Land Map 3-2001
N

Beach Exploration, INc.
Proposed West High Lonesome Penrose Sand Unit
Fresh Water Well Analysis
Form C-108, Item XI

HALLIBURTON DIVISION LABOR/)RY

HALLIBURTON SERVICES

ARTESIA DISTRICT

LABORATORY REPORT **No.** W685, W686, & W687

TO Beach Exploration

P. O. Box 3669

Midland, TX 79701

Date December 4, 1990

Submitted by _____ **Date Rec.** December 4, 1990

Well No. _____ **Depth** _____ **Formation** _____

Field _____ **County** _____ **Source** _____

	(CITY OF CARLSBAD) DOUBLE EAGLE WATER	(WATER WELL # 1) BOGLE MILL #1	(WATER WELL # 2) MILL #2 *
Resistivity	12.55 @ 70°	3.41 @ 70°	12.55 @ 70°
Specific Gravity ..	1.0011 @ 70°	1.002 @ 70°	1.0011 @ 70°
pH	8.1	7.6	7.7
Calcium	1,571	1,675	1,152
Magnesium	508	762	889
Chlorides	300	1,000	300
Sulfates	Small	Heavy	Heavy
Bicarbonates	214	214	214
Soluble Iron	0	0	0
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Remarks:

E D Jacobson

Respectfully submitted

Analyst: Eric Jacobson - Field Engineer

HALLIBURTON SERVICES